HYDRO-QUÉBEC
ANNUAL
REPORT 2012
Hydro
Québec

HYDRO-QUÉBEC

Hydro-Québec generates, transmits and distributes electricity. Its sole shareholder is the Québec government. It uses mainly renewable generating options, in particular hydropower, and supports the development of other technologies—such as wind energy and biomass—through purchases from independent power producers. It also conducts R&D in energy-related fields, including energy efficiency. The company has four divisions:

**HYDRO-QUÉBEC PRODUCTION**
generates power for the Québec market and sells power on wholesale markets. It is also active in arbitraging and purchase/resale transactions.

**HYDRO-QUÉBEC TRANSÉNERGIE**
operates the most extensive transmission system in North America for the benefit of customers inside and outside Québec.

**HYDRO-QUÉBEC DISTRIBUTION**
provides Quebecers with a reliable supply of electricity. To meet needs beyond the annual heritage pool, which Hydro-Québec Production is obligated to supply at a fixed price, it mainly uses a tendering process. It also encourages its customers to make efficient use of electricity.

**HYDRO-QUÉBEC ÉQUIPEMENT ET SERVICES PARTAGÉS**
and Société d'énergie de la Baie James (SEBJ), a subsidiary of Hydro-Québec, design, build and refurbish generating and transmission facilities, mainly for Hydro-Québec Production and Hydro-Québec TransÉnergie.

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**On the cover**

Construction of the concrete base and the asphalt concrete core of Romaine-2 dam (right bank).

Welder Marie-Claude Poirier at work in a penstock at Romaine-2 generating station.

# HYDRO-QUÉBEC AT A GLANCE

Note: Certain comparative figures have been reclassified to conform to the presentation adopted in the current year.

| | 2012 | 2011 |
|---|---|---|
| **Operations and Dividend ($M)** | | |
| Revenue | **12,228** | 12,245 |
| Operating result | **5,177** | 5,214 |
| Result from continuing operations | **2,736** | 2,686 |
| Result from discontinued operations[a] | **(1,876)** | (75) |
| Net result | **860** | 2,611 |
| Dividend | **645** | 1,958 |
| **Balance Sheets ($M)** | | |
| Total assets | **70,517** | 69,637 |
| Property, plant and equipment | **57,174** | 56,901 |
| Long-term debt, including current portion and perpetual debt | **43,524** | 42,050 |
| Equity | **18,982** | 18,834 |
| **Cash Flows ($M)** | | |
| Operating activities | **4,768** | 5,161 |
| Investing activities | **(3,321)** | (3,683) |
| Financing activities | **(639)** | (185) |
| Cash and cash equivalents | **2,183** | 1,377 |
| **Financial Ratios** | | |
| Interest coverage | **2.03** | 2.00 |
| Return on equity from continuing operations (%) | **14.6** | 15.5 |
| Profit margin from continuing operations (%) | **22.4** | 21.9 |
| Capitalization (%) | **30.6** | 31.4 |
| Self-financing (%) | **54.5** | 49.0 |

a) The discontinued operations are related to the decision made in 2012 to abandon the project to refurbish Gentilly-2 nuclear generating station and terminate nuclear power operations.

| | 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| **Customers and Sales** | | | | | |
| Total customer accounts in Québec | **4,107,426** | 4,060,195 | 4,011,789 | 3,960,332 | 3,913,444 |
| Electricity sales in Québec (TWh) | **168.4** | 170.0 | 169.5 | 165.3 | 170.4 |
| Electricity sales outside Québec (TWh) | **35.3** | 26.8 | 23.3 | 23.4 | 21.3 |
| **Workforce as at December 31**[a] | **21,596** | 22,501 | 23,092 | 23,090 | 22,916 |
| **Facilities** | | | | | |
| Number of hydroelectric generating stations | **60** | 60 | 60 | 60 | 59 |
| Total installed capacity (MW)[b] | **35,829** | 36,971 | 36,671 | 36,813 | 36,432 |
| Peak power demand in Québec (MW)[c] | **38,797** | 35,481 | 37,717 | 34,659 | 37,230 |
| Lines (overhead and underground) | | | | | |
| Transmission (km) | **33,911**[d] | 33,630 | 33,453 | 33,244 | 33,058 |
| Distribution (km)[e] | **114,649** | 113,525 | 112,089 | 111,205 | 110,127 |
| Number of substations | **516** | 514 | 514 | 515 | 510 |
| **Power Generation and Purchases** | | | | | |
| Renewables (GWh)[f] | **208,572** | 200,608 | 192,321 | 196,633 | 200,109 |
| All generating sources (GWh) | **213,301** | 207,537 | 203,842 | 203,181 | 206,603 |
| Proportion of renewables (%) | **98** | 97 | 94 | 97 | 97 |

a) Excluding employees of subsidiaries and joint ventures.

b) In addition to the generating capacity of its own facilities, Hydro-Québec has access to almost all the output from Churchill Falls generating station (5,428 MW) under a contract with Churchill Falls (Labrador) Corporation Limited that will remain in effect until 2041. It also purchases all the output from 15 wind farms (1,349 MW) and 3 small hydropower plants (23 MW) and almost all the output from 7 biomass cogeneration facilities (114 MW) operated by independent power producers. Moreover, 1,149 MW are available under long-term contracts with other suppliers.

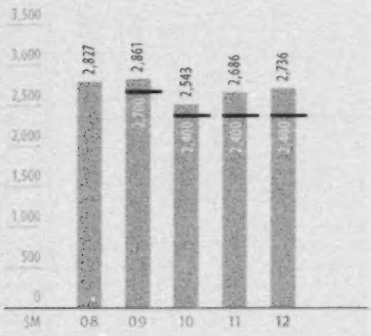
c) The 2012 figure was valid on February 22, 2013. The values indicated correspond to the needs for the winter beginning in December, including interruptible power. The peak for a given period is based on measurements at fixed intervals. The 2012–2013 winter peak was 38,797 MW and occurred on January 23, 2013, at 6:00 p.m., after the system load momentarily reached 39,120 MW at 5:36 p.m.

d) 33,639 km of lines operated by Hydro-Québec TransÉnergie and 272 km by Hydro-Québec Distribution.

e) These figures include off-grid systems but exclude private systems, lines under construction and 44-kV lines (transmission).

f) Excluding wind energy, hydropower and biogas purchases for which renewable energy certificates were sold to third parties.

## RESULT FROM CONTINUING OPERATIONS

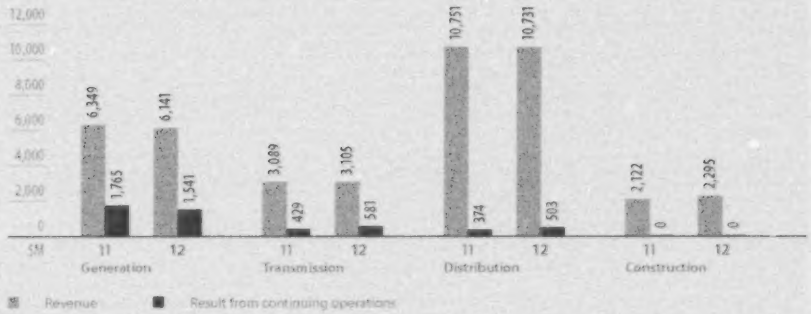



— Target in *Strategic Plan 2009–2013*

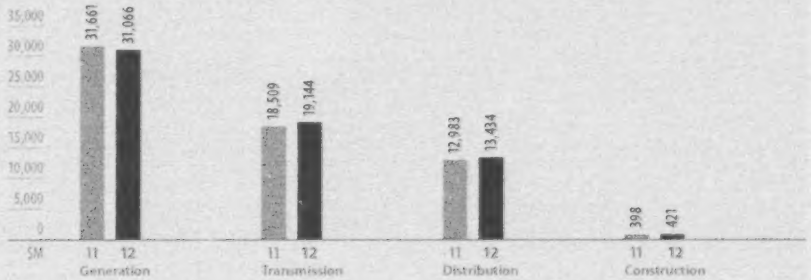
The result from continuing operations totaled $2,736 million, a $50-million increase over 2011. It exceeded the *Strategic Plan 2009–2013* target despite a fairly difficult business environment.

Thanks to the strong performance of our generating facilities and transmission system, we were able to step up our export volume and thus offset lower prices on energy markets. On the Québec market, revenue from electricity sales decreased, mainly because of lower demand in the industrial sector and the negative impact of special contracts with certain large industrial customers. However, efficiency gains achieved within the company made it possible to reduce operating expenses while fully absorbing the impact of inflation and salary indexing as well as the additional expenses resulting from growth in operating assets.

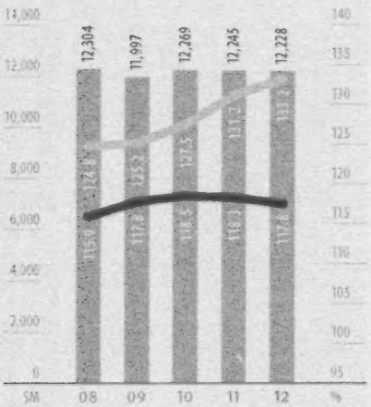
## REVENUE AND RESULT FROM CONTINUING OPERATIONS BY SEGMENT




## TOTAL ASSETS BY SEGMENT




## REVENUE, AVERAGE RATE ADJUSTMENT INDEX AND CONSUMER PRICE INDEX



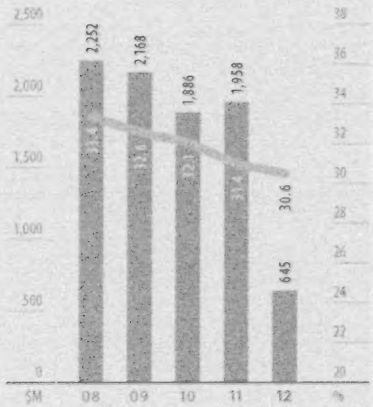

Revenue

Average rate adjustment index (1998 = 100)

Consumer Price Index (1998 = 100)

Revenue totaled $12,228 million, comparable to the $12,245 million posted in 2011. Revenue from electricity sales amounted to $11,736 million, compared to $11,972 million in 2011: it decreased by $278 million in Québec and increased by $42 million on markets outside Québec. Other revenue totaled $492 million, compared to $273 million in 2011.

## DIVIDEND AND CAPITALIZATION

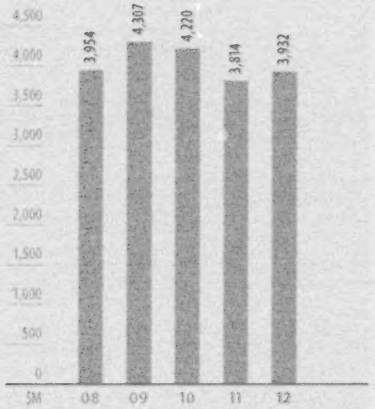



Dividend

Capitalization

Under the *Hydro-Québec Act*, the dividend cannot exceed a distributable surplus, equal to 75% of the net result. The dividend for 2012 amounts to $645 million.

## INVESTMENTS IN PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS[a]




a) Including the Energy Efficiency Plan.

Cash flows from operating activities totaled $4.8 billion. They allowed the company, among other things, to pay the 2011 dividend of $1,958 million and to finance a large portion of its investment program, which reached $3.9 billion.

# Efficient Management

*"Hydro-Québec's accomplishments are attributable to two main factors: the experience of capable managers and the commitment of a high-quality workforce."*

Hydro-Québec's performance in 2012 was remarkable in several respects. Through careful management, the company was able to increase earnings from continuing operations in spite of unfavorable economic conditions. This same careful approach also made it possible to continue or complete a large number of construction and refurbishment projects on time and on budget.

Hydro-Québec's accomplishments are attributable to two main factors: the experience of capable managers and the commitment of a high-quality workforce. They are supported and guided by a Board of Directors that is made up of members from diverse backgrounds, in addition to the Chairman and the President and Chief Executive Officer. The directors exercise a wide range of responsibilities, such as advising Management in the development and implementation of strategic objectives, ensuring sound management and profitability of operations, and approving major infrastructure projects.

I wish to express my gratitude to all the directors for their dedicated participation in the Board's activities, and in particular to Robert Sauvé, Yves Ouellette and Emmanuel Triassi, who left the Board during the year. Congratulations are due, as well, to Thierry Vandal, who was named Canadian Energy Person of the Year by the Energy Council of Canada. Finally, I thank Management and all the employees for the vital role they play in Hydro-Québec's success.

**Michael L. Turcotte**

Chairman of the Board

MESSAGE FROM THE PRESIDENT AND CHIEF EXECUTIVE OFFICER

*"Our success reflects the entire staff's commitment to meet the profitability and efficiency targets we have set."*

# A Commendable Performance

In 2012, Hydro-Québec posted a result from continuing operations of $2.7 billion. This performance, which surpasses the 2011 result and the projections in the *Strategic Plan 2009–2013*, is all the more satisfying given the particularly difficult business conditions the company faced this past year.

In Québec, demand was down in the industrial sector. In addition, we had to buy a significant amount of surplus hydropower from Rio Tinto Alcan because of an increase in its excess output following a labor dispute at one of its large aluminum smelters.

On markets outside Québec, electricity prices tracked those of natural gas, which declined due to the combined effect of two factors: heavy production of shale gas in the United States and relatively slow economic growth continent-wide. Revenue from sales outside Québec nevertheless rose as a result of the strong performance of our generating and transmission facilities—which allowed us to increase the volume of our exports—and the skillful execution of our sales programs.

We continued to make efficiency gains in 2012, enabling us to both reduce our operating expenses and absorb cost increases due to inflation, salary indexation and growth of our operating assets.

It is also noteworthy that our Québec customers benefited from a 0.45% rate reduction, effective April 1, 2012—the second consecutive yearly rate cut.

## ADDITIONS TO THE HYDROELECTRIC GENERATING FLEET

The year began with the commissioning of the third and final generating unit at Eastmain-1-A powerhouse (768 MW). Sarcelle powerhouse (150 MW), which is part of the same project, will follow suit in 2013. The Eastmain-1-A/Sarcelle/Rupert project is a great success story. Originally budgeted at $5.0 billion when it was launched in 2007, this complex undertaking will come in under budget, an accomplishment that attests to Hydro-Québec's skill in managing major infrastructure projects. At the $6.5-billion Romaine complex, construction of the retaining structures at Romaine-2 passed some important milestones in 2012. In addition, we finished excavating the 5.5-km headrace tunnel and erected the structure and exterior walls of the generating

station. Scheduled commissioning: end of 2014. Downstream, excavation began on the site of Romaine-1 generating station, with commissioning slated for 2016. Upstream, construction of the road and facilities required for work to get under way at Romaine-3 and Romaine-4 is proceeding as planned.

At the end of December, Gentilly-2 nuclear generating station ceased operation, which led to the posting of a negative result of some $1.9 billion from discontinued operations. However, this accounting treatment had no impact on cash flows from Hydro-Québec's operating activities.

## A CONSTANTLY EXPANDING TRANSMISSION SYSTEM

In 2012, we continued our work on transmission system expansion, which is necessary to keep pace with native-load growth, integrate new output and carry increasing volumes of interregional power flows. Our main transmission projects are in the Minganie, Capitale-Nationale and Montréal regions. At the same time, we bolstered the capacity of a number of links that are essential to the smooth operation of the power system.

## CONTINUED INVESTMENTS IN ASSET SUSTAINMENT

Asset sustainment is imperative for the long-term security and reliability of the electricity supply. In 2012, we invested $560 million in refurbishing or optimizing major components of the generating fleet. One example is the refurbishment of the generating units at Robert-Bourassa, the world's largest underground hydropower facility, which will go on until 2020. Additionally, we devoted $735 million to our transmission grid—the most extensive in North America. These investments have a twofold objective: ensure compliance with North American standards and regulatory requirements, and provide our customers with top-quality service.

## AN EVOLVING METERING INFRASTRUCTURE

The Régie de l'énergie, having noted the advantages of an advanced metering infrastructure and accepted the rationale we presented, approved phase one of our remote meter reading project, which calls for the rollout of 1.7 million next-generation meters and data transmission equipment in the greater Montréal area between 2012 and 2014. These meters will allow us to record customers' power consumption without having to access their premises and will facilitate certain frequently performed operations, such as those related to moving. Ultimately, we plan to deploy 3.75 million next-generation meters throughout the province. This project will enable us to replace the current generation of meters, which have reached the end of their life cycle, while enhancing the company's operating efficiency and improving customer service.

## UNFAILING SUPPORT

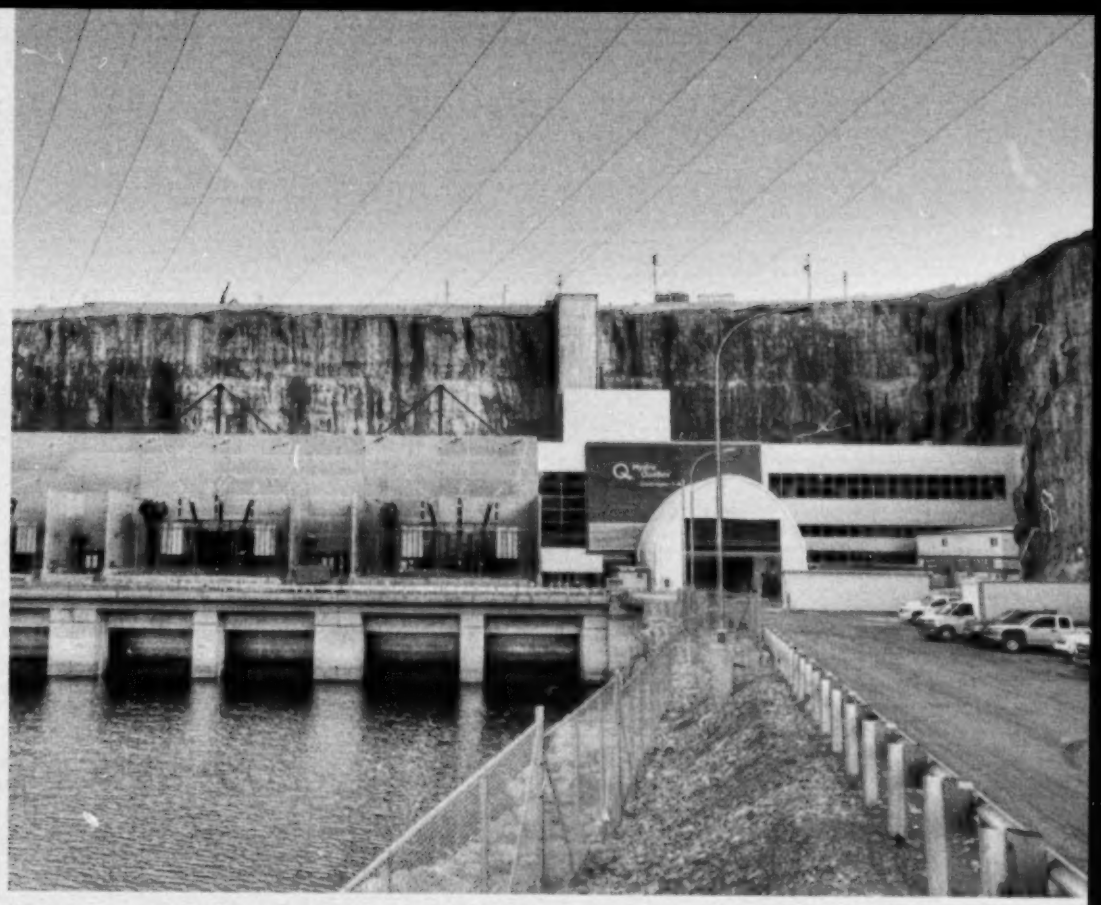
Our performance testifies to the steadfast effort and commitment of the women and men who work for Hydro-Québec or its partners. Because of them, we are able to offer clean, reliable, affordable electricity all over the province, while maintaining a solid financial performance that benefits Québec as a whole. They have my sincere gratitude. I also want to thank the members of the Board of Directors for their contribution to Hydro-Québec's achievements.

**Thierry Vandal**

President and Chief Executive Officer

# HYDRO-QUÉBEC PRODUCTION

**Richard Cacchione**
President
Hydro-Québec Production



Eastmain-1-A powerhouse has been fully operational since the commissioning of its third and final unit in January 2012.

**OUR MISSION** Hydro-Québec Production generates power to supply the domestic market and sells power on wholesale markets.

**OUR FACILITIES** Our generating fleet comprises 59 hydroelectric generating stations and 2 thermal generating stations, representing assets worth $25.8 billion and installed capacity of 35.7 GW. Our hydroelectric fleet also includes 26 large reservoirs with a combined storage capacity of 175 TWh, as well as 664 dams and 97 control structures.

**OUR ACTIVITIES** We supply Hydro-Québec Distribution with an annual maximum volume of 165 TWh of heritage pool electricity. Above that volume, we sell our output in Québec, mainly in response to tender calls by Hydro-Québec Distribution, and outside Québec, on wholesale markets in northeastern North America.

## 2012 IN FIGURES

| | |
|---|---|
| Revenue | **$6.1 billion** |
| Result from continuing operations | **$1,541 million** |
| Result from discontinued operations | **($1,867 million)** |
| Net result | **($326 million)** |
| Customers (% of revenue from electricity sales) | |
| *Hydro-Québec Distribution* | **76%** |
| *Other* | **24%** |
| Sales volume | |
| *Hydro-Québec Distribution* | **165.7 TWh** |
| *Other* | **35.9 TWh** |
| Property, plant and equipment as at December 31 (including work in progress) | **$29.6 billion** |
| Investments in property, plant and equipment and intangible assets | **$1.5 billion** |

# Hydropower: A Clean Energy Source

In June 2012, Hydro-Québec Production proudly inaugurated the Eastmain-1-A powerhouse in the Baie-James region. Considered a prime example of social and environmental integration, the Eastmain-1-A/Sarcelle/Rupert project demonstrates Hydro-Québec's commitment to sustainability. We are now focusing the major part of our efforts on another flagship project: the Romaine jobsite. Once both Eastmain-1-A/Sarcelle/Rupert and the Romaine complex are on stream, they will be able to produce close to 17 TWh of clean, renewable energy every year. And while developing Québec's hydroelectric potential, we also continued to ensure the long-term operability and optimization of our assets by investing $560 million in our generating fleet.

In 2012, Hydro-Québec Production posted a result of $1,541 million from continuing operations. We paid $617 million in water-power royalties earmarked for the Generations Fund, a significant contribution to the Québec economy. Again this year, our personnel played a key role in our success.

As regards Gentilly-2 nuclear generating station, the Québec government, on Hydro-Québec's recommendation, decided to abandon its refurbishment due to an increase in project costs combined with a drop in energy prices on external markets.

## A RAPIDLY EVOLVING GENERATING FLEET

*In the last decade, Hydro-Québec Production has focused on hydroelectric development projects. The division inaugurated several major facilities and structures in recent years, namely, Sainte-Marguerite-3, Rocher-de-Grand-Mère, Toulnustouc, Eastmain-1, Mercier, Péribonka, Chute-Allard, Rapides-des-Cœurs and Eastmain-1-A generating stations, as well as the Rupert diversion. Our infrastructure projects must meet three fundamental criteria in order to proceed: they must be profitable, environmentally acceptable and favorably received by the host communities. These considerations are in line with the company's sustainable development strategy.*

■ In the Baie-James region, the last generating unit at Eastmain-1-A powerhouse was commissioned in January 2012, and the three units at Sarcelle powerhouse will follow in 2013. The $5.0-billion Eastmain-1-A/Sarcelle/Rupert project will have an installed capacity of 918 MW for an annual output of 8.7 TWh, which includes significant additional output (5.3 TWh) as a result of diverting part of the Rupert's flow to existing generating stations in the La Grande complex. In 2012, three years after the Rupert diversion went into operation, we reported to the competent Québec authorities on the fulfillment of our undertakings with regard to mitigation measures, the efficacy of those measures, and how they are perceived by Cree land users. In the fall, we also held consultations in the six Cree communities affected, to hear their opinions on the measures.

■ At the Romaine jobsite, in the Minganie region, work on the Romaine-2 development continued as scheduled, with commissioning planned for 2014. We also began erecting the first facilities for the Romaine-1 development, which will be operational in 2016. In addition, the Route de la Romaine reached kilometre 117 and a workcamp was built near the Ruisseau Mista at kilometre 116, allowing us to start work at the Romaine-3 jobsite. The $6.5-billion Romaine project calls for the construction of four generating stations with a total capacity of 1,550 MW and annual output of 8.0 TWh on the Rivière Romaine, north of Havre-Saint-Pierre. Completion is slated for 2020.

*The 61 generating stations operated by Hydro-Québec Production have a total installed capacity of 35.7 GW.*

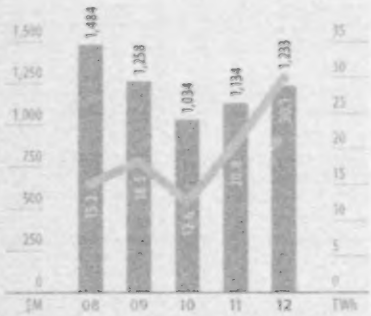
Civil engineering technician Stéphanie Cloutier inspects the gates of the Almaville spillway, one of structures in the Shawinigan complex.

## LONG-TERM OPERABILITY AND OPTIMIZATION OF FACILITIES

*One of Hydro-Québec Production's main priorities is to ensure the long-term operability and optimization of its facilities. Highly specialized teams are continually evaluating the condition and performance of equipment to determine the type and urgency of work that may be required. In 2012, $560 million was invested in the refurbishment and refitting of generating stations.*

- In the Baie-James region, unit overhaul continued at Robert-Bourassa generating station, the most powerful facility in our generating fleet. This project will continue until 2020. The first phase, which got under way in 2011, includes replacement of the speed governors, the excitation and control systems, and some turbine runners.
- We launched a project to expand and upgrade our network of hydrometeorological monitoring stations. This network, which covers the entire province, allows us to collect data (on precipitation, snow conditions, temperature, etc.) that is critical for planning generation and maintenance, managing facilities in real time, and designing new equipment. Under this 10 year project, new stations will be added and obsolete ones will be replaced.
- In the Manicouagan region, the overhaul of a generating unit at the Jean-Lesage facility (formerly Manic-2) progressed at a steady pace. The work, which should be completed in 2013, will ensure the long-term operability of the unit

**NET ELECTRICITY EXPORTS BY HYDRO-QUÉBEC PRODUCTION**



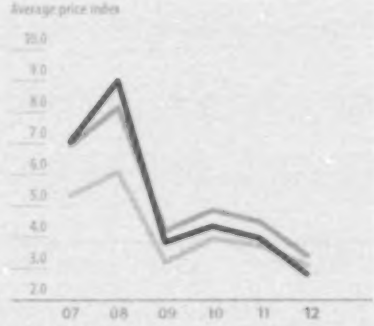

- Net contribution (factoring in revenue from energy derivatives) ($M)
- Net reservoir drawdown (TWh)

**NET ELECTRICITY SALES AND NET RESULT OF HYDRO-QUÉBEC PRODUCTION, BY MARKET**[1]

- Exports
- Heritage pool – Québec
- Other sales – Québec

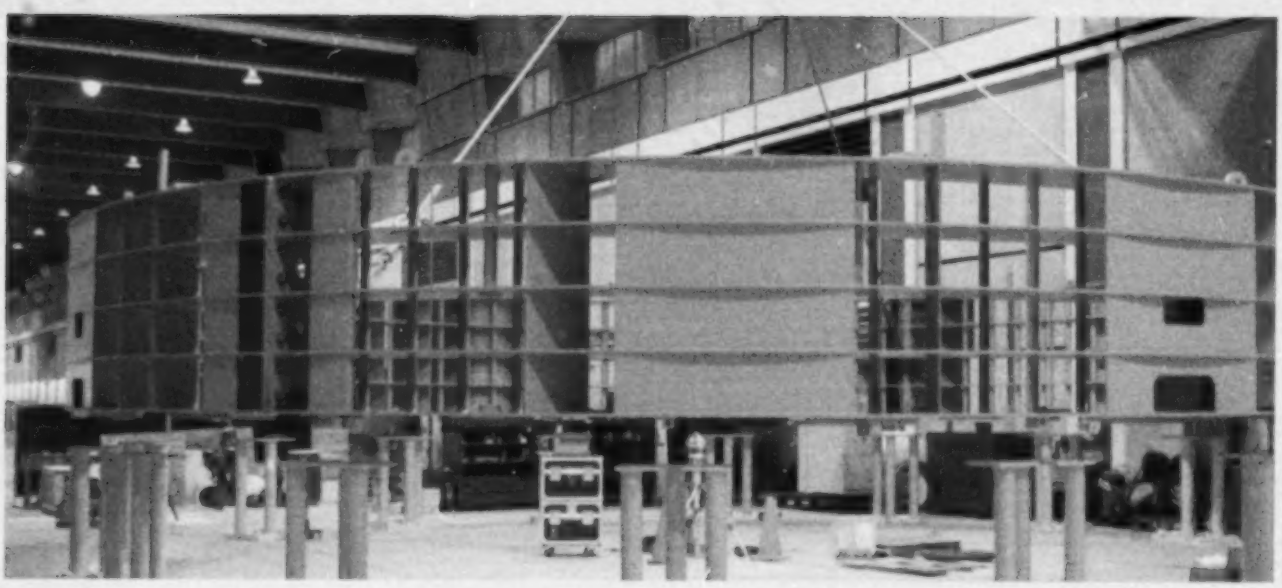
a) The net result excludes the write-off of property, plant and equipment under construction and the impairment of assets related to Gentilly-2 nuclear generating station.

**TRENDS IN ENERGY PRICES ON HYDRO-QUÉBEC'S EXTERNAL MARKETS**




- Natural gas: Henry Hub (US$/MMBtu)
- Electricity: New England – ISO-NE, Mass Hub, Day-Ahead Market (US¢/kWh)
- Electricity: New York – NYISO, Zone A, Day-Ahead Market (US¢/kWh)

After reaching a historic peak in 2008, natural gas and electricity prices in northeastern North America dropped sharply in 2009, then rose slightly in 2010 only to fall again, such that prices in 2012 were at their lowest in 10 years.

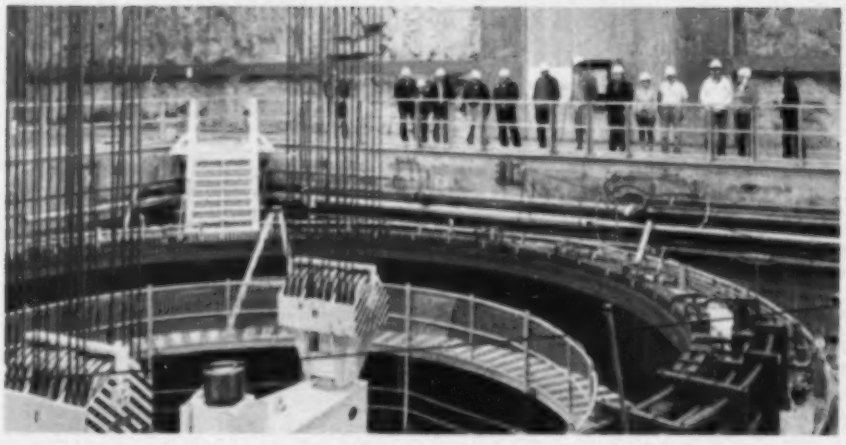


*We are continuing to develop hydropower to ensure a clean, renewable energy source for future generations.*

*We use water to generate 98% of our output.*

and add about 30 MW of capacity. In addition, we continued a major overhaul of the auxiliary equipment at Manic-1, with a similar view to asset sustainment.

- In the Montérégie region, the overhaul of six units at Beauharnois generating station is proceeding on schedule. This large-scale project will prolong the station's service life and considerably increase its output. We reached major milestones with the completion of several other projects at the same facility, including replacement of the control system, which we began in 2012.
- In the Outaouais, a number of projects are being carried out at Paugan generating station to ensure long-term operability.
- In Montréal, we finished renovating the buildings at Rivière-des-Prairies generating station.
- In Abitibi-Témiscamingue, the refitting of Rapide-2 and Rapide-7 generating stations continued. Replacement of the turbine runners and some mechanical components should yield about 12 MW of additional capacity at each facility.



- We completed the refurbishment of Melville dam (Mauricie), as well as Coteau-1, Coteau-3, Île-Juillet-1 and Île-Juillet-2 dams (Montérégie). Work continued at Gouin and La Tuque dams (Mauricie).
- In fall 2012, on Hydro-Québec's recommendation, the Québec government announced that the company would not proceed with the refurbishment of Gentilly-2 nuclear generating station. The facility ceased operation at the end of December, in accordance with its operating licence. The decommissioning activities provided for in government regulations began in January 2013.

1 Inauguration ceremony at Eastmain-1-A powerhouse.

2 At Jean-Lesage generating station, a stator frame is lowered onto a temporary support structure for installation of the windings and other components.

3 Visitors watch work being done on one of the units at Robert-Bourassa generating station.

4 Nancy Pelchat, power system electrician at Robert-Bourassa and La Grande-2-A generating stations.

1

## CREATING VALUE FROM QUÉBEC POWER

*The generating fleet is managed with two major goals in mind: the security of Québec's electricity supply and the profitability of operations. Thanks to the operating flexibility of large hydropower, Hydro-Québec Production can meet Québec demand while exporting some of its power. Because reservoir generating stations have huge storage capacity and can be started up in a matter of minutes, we can adjust output not only to domestic demand but also to conditions on export markets.*

- Electricity sales to Hydro-Québec Distribution totaled 165.7 TWh in 2012, compared with 168.6 TWh in 2011. The decrease was mainly due to mild temperatures in 2012.
- Electricity sales outside Québec brought in $1,431 million for 35.2 TWh, versus $1,397 million for 26.7 TWh in 2011. Thanks to the strong performance of our generating facilities and the transmission system, we were able to compensate for the decline in market prices (caused by a substantial rise in U.S. shale gas production) by stepping up exports. Net exports amounted to $1,233 million, compared with $1,134 million in 2011.
- Hydro-Québec Production is continuing talks regarding possible participation in an underground/underwater transmission line project between Québec and New York State. This project would give us access to new markets.
- As at December 31, 2012, reservoir storage stood at 110.7 TWh, compared with 102.8 TWh at the end of 2011. Hydro-Québec Production maintains a sufficient energy reserve at all times to offset a potential runoff deficit equivalent to 64 TWh over two consecutive years and 98 TWh over four consecutive years. We also keep a capacity reserve approximately 8% higher than our contractual commitments, in accordance with the industry's reliability criteria.

## INNOVATING TO MAXIMIZE OUTPUT

*Through its innovation efforts, Hydro-Québec Production primarily seeks to increase the efficiency, availability and useful life of its assets. Conducted in collaboration with Hydro-Québec's research institute (IREQ), industry partners and university researchers, the work performed in 2012 was part of a portfolio of 29 projects with a total value of $15 million.*

- We continued to develop various tools aimed at optimizing generating facility operation and maintenance. Examples:

*In 2012, the average cost of a kilowatthour was 2.09¢. This corresponds to the sum of our generating, procurement and sales costs divided by the net sales volume.*

- Scompi a welding robot developed by IREQ to perform maintenance work on hydroelectric generating station turbines and gates. Over the years, this portable robot added gouging, grinding and polishing to its functions and can now be used to repair and build various parts. Scompi's advantages include the precision of its operations, the decreased time and cost of work on equipment that can be very difficult to access (gate embedded parts, turbine blades, etc.), and reduced risks for workers.
- AUPALE Rotor: multiphysical modeling (electromagnetic, thermal, mechanical and fluid) designed to increase generator capacity without compromising service life. In 2012, we tested this model at Rapides-des-Quinze and Rapide-2 generating stations and assessed aspects such as potential capacity gain.
- PREDDIT project: development of tools for diagnostic tests on turbines (cracking, cavitation and corrosion) and of optimal runner repair and welding methods. In 2012, we focused our efforts on designing a reliability model based on rupture mechanics that can be used to determine the

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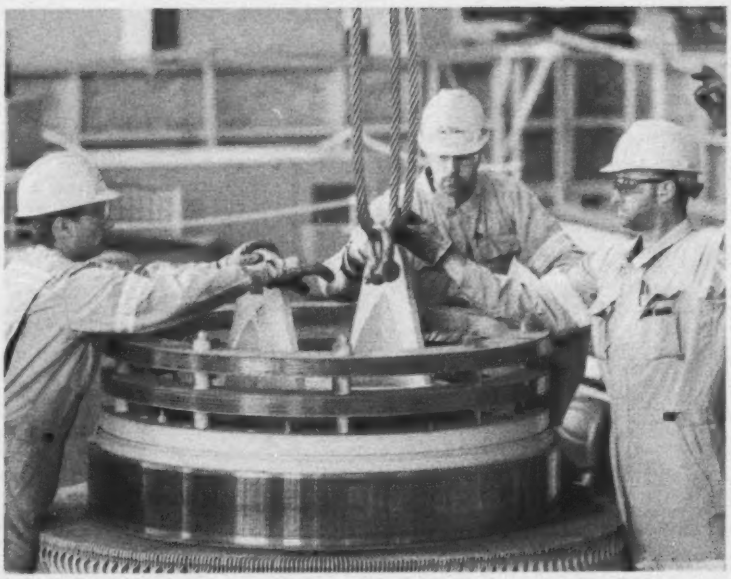

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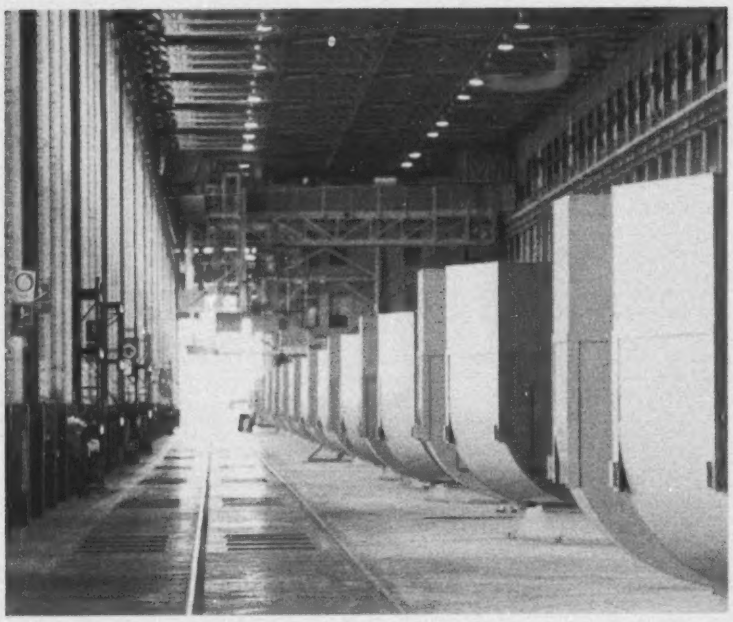

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speed of cracking propagation and the point past which a crack will lead to a rupture. Objective: to reduce the number of unscheduled turbine shutdowns and to plan refurbishment projects on the basis of actual turbine condition. We also worked on a model for predicting cavitation in turbine runners.

■ All our generating stations are equipped with battery banks to power the systems. The batteries are made of lead or nickel-cadmium, which causes certain maintenance and safety constraints. Since 2011, we have been running a pilot project at La Gabelle generating station (Mauricie) to test a lithium-iron-phosphate-based lithium-ion battery, a technology that incorporates some of IREQ's innovations. This solution offers several advantages for both reliability and service life: no risk of explosion, leakage or fire, weight and cost reduced by 50%, ease of maintenance, etc. If the results are conclusive, this type of battery could be used on a wider scale in the company's generating and transmission facilities.

1 Commercial delegates at work on Hydro-Québec Production's energy trading floor.

2 At Beauharnois generating station, chief power system electrician Pierre-Yves Hudson operates a grinding wheel after removal of support structures in a turbine pit.

3 Powerhouse mechanics Dominic Demers, Robert Jr. Côté and Éric Lefebvre remove the main exciter on one of the units at Beauharnois generating station.

4 The hall that houses Beauharnois generating units 1 to 14.

5 Powerhouse mechanic Marc-André Leblanc (foreground) and chief powerhouse mechanic Richard Beaubé prepare to start up a unit at Beauharnois generating station.

# HYDRO-QUÉBEC TRANSÉNERGIE

**André Boulanger**
Président,
Hydro-Québec TransÉnergie

On January 23, 2013, electricity demand reached a historic peak of 39,120 MW.

**OUR MISSION** Hydro-Québec TransÉnergie operates the most extensive transmission system in North America, markets system capacity and manages power flows across Québec. Our Direction – Contrôle des mouvements d'énergie acts as Reliability Coordinator for transmission systems in Québec.

**OUR FACILITIES** Our system comprises 33,639 km of transmission lines and 516 substations, including interconnections that allow power interchanges with grids in the Atlantic provinces, Ontario and the U.S. Northeast. Our tariff, approved by the Régie de l'énergie, ensures non-discriminatory access to our system in compliance with North American regulatory requirements.

**OUR ACTIVITIES** To meet evolving customer needs and ensure high-quality transmission service, Hydro-Québec TransÉnergie works diligently to ensure the development, reliability and long-term operability of its system. With a view to continuously improving its performance, the division also focuses particular attention on developing its expertise.

## 2012 IN FIGURES

| | |
|---|---|
| Revenue | **$3.1 billion** |
| Result from continuing operations | **$581 million** |
| Result from discontinued operations | **($9 million)** |
| Net result | **$572 million** |
| Customers (% of revenue) | |
| *Hydro-Québec Distribution* (native load transmission service) | **84%** |
| *Hydro-Québec Production and other North American wholesalers* (point-to-point transmission services) | **12%** |
| *Other* | **4%** |
| Property, plant and equipment as at December 31 (including work in progress) | **$18.1 billion** |
| Investments in property, plant and equipment and intangible assets | **$1.4 billion** |

# In Line with the Future

In 2012, Hydro-Québec TransÉnergie invested $1.4 billion in its transmission facilities under a two-pronged program. This investment was intended, first of all, to expand the system in order to keep up with native-load growth, integrate new output and carry increasing volumes of inter-regional power flows. Secondly, we must maintain or refurbish our facilities to ensure the smooth functioning and long-term operability of the system. Much of our effort was of course devoted to bringing new wind and hydroelectric capacity onto the grid and strengthening our interconnections with neighboring markets, but replacing assets was also a major area of activity. To provide high-quality service while respecting the principles of sustainability, it is more important than ever to build the future while preserving what already exists. For this reason, we have adopted an asset life cycle management system that will enable us to make enlightened decisions on facility maintenance, optimization or modernization, based on factors such as performance, safety, regulatory requirements and cost-effectiveness. The goal is to engage in operationally and economically optimized maintenance so as to ensure that our assets function properly throughout their life cycle.

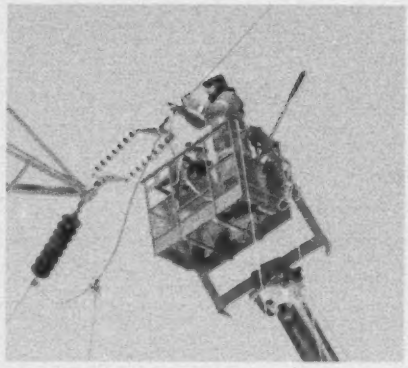
These efforts pay off, as is demonstrated by the fact that the Hydro-Québec TransÉnergie system meets the most stringent reliability criteria and performs exceedingly well in terms of service continuity, despite its vast size and the harsh climatic conditions it is subject to.

Managing a large transmission system poses a major technical challenge. We are able to count on committed, highly skilled employees who do their utmost to continue providing top-quality service.

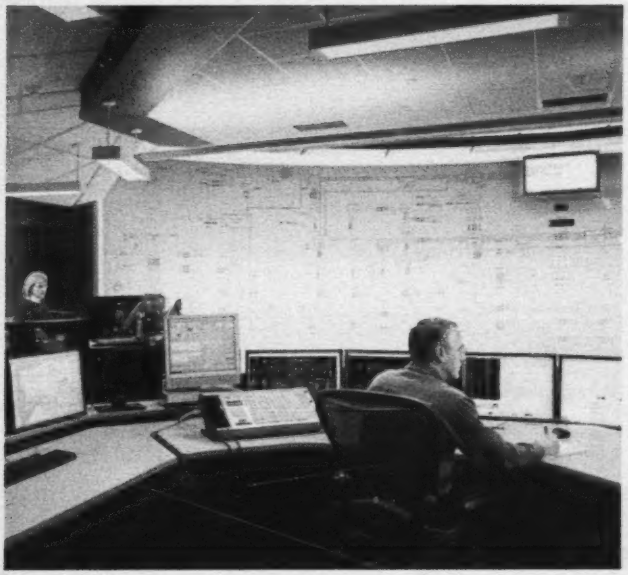
## OPTIMAL SYSTEM GROWTH

*In 2012, Hydro-Québec TransÉnergie devoted $688 million to expanding the transmission system in order to keep up with growth in demand and integrate output from new generating facilities. We bolstered the capacity and improved the reliability of a number of links whose loads are expected to increase. Extensive efforts also went into bringing wind farms and hydroelectric generating stations onto the grid. Our main system expansion projects are located in the Capitale-Nationale, Montréal and Côte-Nord (principally Minganie) regions. In the latter region, we plan to build approximately 500 km of lines and four switchyards by 2020 to integrate output from the Romaine complex.*

- In Lanaudière, we broke ground on Lachenaie substation (315/25 kV), scheduled for completion in 2013. This project is part of the plan to develop the grid serving the Mille-Îles Est area.
- We connected seven wind farms associated with the project to integrate 2,000 MW of wind capacity contracted for by the Distributor further to a tender call issued in 2005. These were Montérégie, L'Érable (Centre-du-Québec), Massif-du-Sud and Les Moulins (Chaudière-Appalaches), Saint-Robert-Bellarmin (Estrie and Chaudière-Appalaches), Lac-Alfred (Bas-Saint-Laurent) and New Richmond (Gaspésie–Îles-de-la-Madeleine).
- As part of the project to extend the transmission system in Minganie to connect the 1,550-MW Romaine complex, we began building the switchyard at Romaine-2 generating station (scheduled completion: 2014) and the 735-kV line that will connect Romaine-2 to Arnaud substation (scheduled completion: 2014). In addition, work started up on 735/315/120-kV Outardes substation and the related 735-kV lines (Manicouagan, scheduled completion: 2014).



Line crew chief Réjean Morin and lineworker Guy Jr. Lavoie replace insulators on a 120-kV transmission line.



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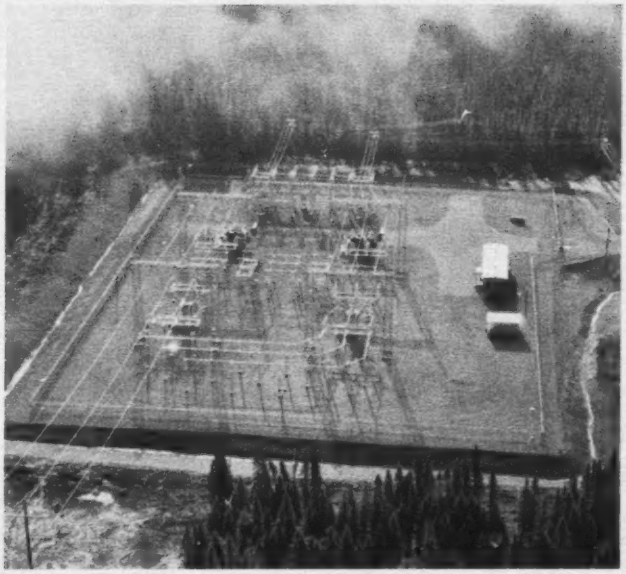

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*Recognized worldwide for its expertise in large transmission grids, Hydro-Québec TransÉnergie has developed a number of programs to preserve its employees' highly specialized know-how.*

■ In the Baie-James region, the last generating unit at Eastmain-1-A powerhouse came on stream in January 2012; the three units at Sarcelle will follow in 2013.

■ Construction is under way on Charlesbourg substation (230/25 kV), with the related tap lines set to follow in the coming months. The new substation will replace L'Épinay substation (69/25 kV), which does not have the necessary transformer capacity to keep pace with growth in demand (Capitale-Nationale). Scheduled completion: 2013.

■ We began building Saint-Bruno-de-Montarville substation (315/25 kV) to meet rising demand on Montréal's south shore (Montérégie). Scheduled completion: 2013.

■ Steady progress was made on the project to reinforce the 230-kV and 120-kV grid supplying Bécancour industrial park. The goal is to meet growing demand and ensure the reliability and long-term operability of the facilities (Centre-du-Québec).

■ We are continuing our activities to expand interconnections with neighboring provinces and the U.S. Northeast. Work to secure the interconnections with New York State and New England proceeded as scheduled. We are also studying projects for new interconnections with these markets.

■ In 2012, we carried out several technical and economic studies on the connection of large mining operations that could open up in Abitibi and the Labrador Trough (Côte-Nord and Nunavik). Among other things, the grid would need to be reinforced and new lines may have to be built to supply these facilities.

■ In 2012, the Régie de l'énergie approved 11 major Hydro-Québec TransÉnergie infrastructure projects, worth a total of $660 million:

*To meet the many challenges arising from transmission system evolution, we are applying power industry best practices and relying on the expert knowledge of dedicated employees.*

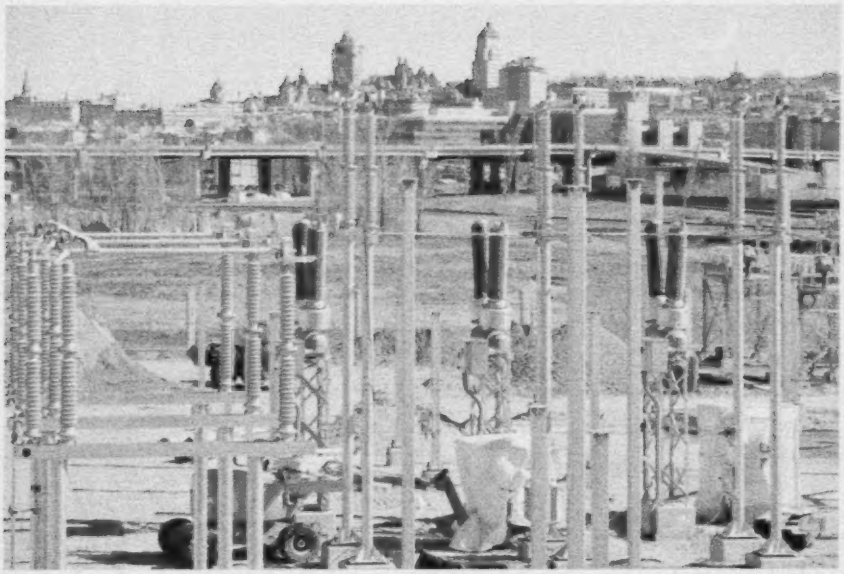
□ Construction of Blainville substation (315/25 kV) and tap line to keep pace with growing demand in the central and western Basses-Laurentides region. Cost: $84 million. Scheduled completion: 2014.

□ A $47-million project to build Lefrançois substation (315/25 kV) and tap line in the Capitale-Nationale region. Once this project is completed, Montmorency substation (69/25 kV) and a number of related lines that are reaching the end of their service lives can be dismantled. Scheduled completion: 2014.

□ Waswanipi substation (315/25 kV) and tap line, needed to meet increased demand in and around the Cree community and to ensure the long-term operability of the transmission system. Cost: $36 million. Scheduled completion: 2015.

**INVESTMENTS IN THE TRANSMISSION SYSTEM ($M)**

| | **2012** | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| System growth | **688** | 460 | 423 | 493 | 559 |
| Asset sustainment (reliability and long-term operability) | **735** | 832 | 825 | 703 | 540 |
| Total | **1,423** | 1,292 | 1,248 | 1,196 | 1,099 |



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□ Construction of a 230-kV double-circuit line between Saint-Césaire and Bedford substations, in Montérégie, addition of equipment at both substations and expansion of the Bedford facility. The objective: ensure the reliability of the regional grid and of interchanges between Québec and Vermont at a time of growing customer demand. Cost: $95 million. Scheduled completion: 2014.

□ A 120-kV double-circuit line to be built between Chaudière and Saint-Agapit substations in order to keep pace with native-load growth in the Chaudière-Appalaches region. Cost: $25 million. Scheduled completion: 2013.

□ Reinforcement of the 315-kV transmission grid in Abitibi. Among other objectives, this project will enable us to meet the growing needs of mining companies in the region. Cost: $119 million. Scheduled completion: 2014.

□ Reinforcement of the 120-kV transmission grid in the Palmarolle and Rouyn areas of the Abitibi region to keep up with demand growth, which stems largely from local mining activity. Plans include running a 120-kV double-circuit line between Figuery and Palmarolle substations. Cost: $34 million. Scheduled completion: 2014.

*Over the last five years, Hydro-Québec TransÉnergie has devoted $3.6 billion to projects intended to ensure the reliability and long-term operability of transmission assets.*

□ Installation of three synchronous compensators at Cadillac substation to regulate voltage on the 120-kV grid in the Abitibi region, a project made necessary by the prolonged shutdown of Cadillac thermal generating station. Cost: $52 million. Scheduled completion: 2014.

□ Refurbishment of a synchronous compensator and related systems at Manicouagan substation to ensure long-term operability and improve substation security and stability, while optimizing system capacity. Cost: $70 million. Scheduled completion: 2014.

□ Replacement of 735-kV current transformers at 22 strategic substations on the transmission grid. Cost: $66 million. Scheduled completion: 2013.

□ Replacement of transmission system maintenance management and analysis software as part of a plan to optimize asset maintenance systems and procedures. Cost: $32 million. Scheduled completion: 2013.

**1** François Coulombe and Jocelyne Primeau, operators at the system control centre.

**2** Aerial view of Waconichi substation, which serves the Cree community of Mistissini.

**3** Limoilou substation was inaugurated in the Capitale-Nationale region. It will be the main supply source for Vieux-Québec and Parliament Hill.

**4** Tower erection during rebuilding of the 230-kV line connecting Nicolet and Bécancour substations.

**5** Safety advisor Christian Provost and line crew chief Étienne Hébert discuss safety measures to be applied for an operation on a live line in Abitibi.

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## ASSET SUSTAINMENT

*In 2012, we invested $735 million in upgrading and modernizing the transmission system. The objectives: offer high-quality service at the best possible cost, comply with current standards and regulatory requirements, meet customers' needs and facilitate cross-border interchanges. Drawing inspiration from best practices in the energy industry, we are relying on a strategy of optimal, sustainable asset management, based in part on state-of-the-art diagnostic tools.*

- 120/25-kV Neubois substation (Chaudière-Appalaches) took over from 69/25-kV Scott and Beaurivage substations, which were reaching the end of their service lives.
- 230/25-kV Limoilou substation (Capitale-Nationale) was inaugurated, replacing Montcalm substation. It will gradually take over from La Reine substation as well. Eventually, the Limoilou facility will be the main supply source for Vieux-Québec and Parliament Hill.
- In Montréal, we continued work to construct a 735/315-kV section at Bout-de-l'Île substation (scheduled completion: 2014) and a 315/120/25-kV substation on the site of the existing Bélanger substation (scheduled completion: 2014). Bout-de-l'Île will be our first 735-kV substation on the island of Montréal.
- Refurbishment of auxiliary systems at 735/315/120-kV Châteauguay substation (Montérégie) made steady progress. The aim of this project is to ensure the quality of cross-border interchanges.
- We completed the refurbishment and expansion of 315/161/69-kV Hauterive substation (Côte-Nord). This project had three objectives: increase security of the regional 315-kV grid, keep up with native-load growth and extend the life of the substation, which was built in 1960.
- In its capacity as Reliability Coordinator for Québec, our Direction – Contrôle des mouvements d'énergie submits the reliability standards established by the North American Electric Reliability Corporation (NERC) to the Régie de l'énergie. These must be applied under a continent-wide regime of mandatory standards. In 2011, following a decision by the Régie, the Reliability Coordinator began the process of adapting 95 NERC reliability standards to the Québec context by adding schedules containing clarifications, interpretations, exceptions and terms of application. In July 2012, the Régie approved the first 12 standards for implementation in Québec.

*We are working to establish centralized technology governance in order to harmonize our business practices and technological projects.*

- In 2012, the Reliability Coordinator embarked on a public consultation, following a procedure established by the Régie, on the additional or updated reliability standards it plans to file in 2013. During the year, the Coordinator will also submit an amended version of the guide setting out the sanctions applicable in cases of non-compliance with the NERC standards.
- We adopted strict follow-up mechanisms to ensure that suppliers adhere to our quality standards and criteria. For example, a new guideline specifies which components must be checked before facilities commence operation.
- In the environmental sphere, we concentrated our efforts on three priority objectives:
  - Develop an integrated management approach for contaminated properties, so as to optimize the action we take.
  - Improve our understanding of the grid's impacts on the biophysical and human environment.
  - Better integrate the environmental management system (ISO 14001) into the division's business processes and projects.

1 Hydro-Québec TransÉnergie uses mobile service units to optimize fieldwork.

2 Meteorologist Gilles Cazade works in Prévisions et statistiques – Contrôle du réseau in our Direction – Contrôle des mouvements d'énergie. This unit produces hourly four-day forecasts for nine areas of Québec and daily 10-day forecasts for the cities of Québec and Montréal, in addition to weather bulletins and warnings for system managers.

3 In just 17 days, around 150 employees—power system electricians, civil engineering workers, technicians, engineers, managers and others—replaced 93 current transformers at five substations: Chibougamau, Nemiscau, La Grande-2, La Grande-3 and La Grande-4.

4 Installation of a new model of SF$_6$-insulated transformer at La Grande-2 substation.

## INNOVATING TO IMPROVE TRANSMISSION SERVICE

*In 2012, we devoted more than $21 million to innovation. Our efforts revolve around two main priorities: system performance and smart grid. However, we are also working on innovations targeting employee safety, optimized system capacity, asset sustainment, failure prevention and efficiency. Our R&D projects are conducted in cooperation with Hydro-Québec's research institute (IREQ), the company's other divisions and various renowned research centres and firms.*

- To facilitate the detection of potentially dangerous vegetation in transmission line rights-of-way, we tested a remote sensing technology called LiDAR (Light Detection And Ranging) along 1,500 km—or 7%—of Hydro-Québec TransÉnergie lines. This NERC-recognized method uses an airborne laser altimeter that scans the area to measure the height of the ground cover. Coupling laser with GPS allows the data to be georeferenced. If the results prove conclusive, this method will go into widespread use, enabling us to locate dangerous vegetation in rights-of-way much faster. Vegetation control under transmission lines is imperative for the safety of the public, workers and the system itself.
- Robots developed in IREQ laboratories were used extensively in 2012. For example, we put the LineROVer to work inspecting the river crossing on the Sorel–Francheville line to ensure that cable corrosion would not cause any breakage during the dismantling of this historic link. The LineROVer is a remotely operated vehicle designed to perform various operations on live lines: de-icing, inspection, measuring the electrical resistance of splices, replacing ground wires, etc.
- We are examining a robotic solution that would allow maintenance personnel to work on substation equipment safely from a distance.
- As various projects are carried out at our substations, we are taking the opportunity to continue the gradual rollout of equipment that can be monitored remotely from our telemaintenance centres. The objective: determine priority maintenance targets, prevent costly failures and bring transformer equipment management into line with the NERC Critical Infrastructure Protection Standards.

### BREAKDOWN OF INVESTMENTS IN RESEARCH AND DEVELOPMENT IN 2012 ($M)

| | |
|---|---|
| Technological innovation | **17.1** |
| Technical support | **3.9** |
| Technology intelligence | **0.4** |

- The de-icer actuated by cartridge (DAC), a remotely operated portable device that proved its worth during the winter of 2011–2012, was put into widespread use.
- Implementation of the ACOR system improvement project is proceeding as planned. This project has two components: improving existing tools and developing new optimization tools, such as a compensator control system that will enable us to increase capacity on all or part of the grid.
- In 2012, the Association pour le développement de la recherche et de l'innovation du Québec (ADRIQ) paid tribute to Hydro-Québec and its partner ndb Technologie for their exemplary collaborative effort to design and manufacture a portable system to detect partial discharges and hot spots in power transformers. With this innovation, it is now possible to diagnose and correct such problems on-site.

# HYDRO-QUÉBEC DISTRIBUTION

**Daniel Richard**
President
Hydro-Québec Distribution

HUGO-SÉBASTIEN AUBERT © LA PRESSE

After the storm that hit Québec on December 21, some 800 people—Hydro-Québec crews and other workers—carried out more than 4,500 on-site repairs to restore power.

**OUR MISSION** Hydro-Québec Distribution ensures a secure, reliable supply of electricity and delivers high-quality services to the Québec market.

**OUR ACTIVITIES** To meet electricity demand, Hydro-Québec Distribution relies primarily on the heritage pool of 165 TWh, which it purchases from Hydro-Québec Production. For demand beyond that volume, it negotiates long-term supply contacts and purchases power on the market. The division operates the distribution system efficiently and ensures its reliability. It is also responsible for customer relations with Hydro-Québec's domestic customers. It offers customers products and services tailored to their needs, as well as a wide range of energy efficiency programs.

**OUR FACILITIES** The division operates a distribution system comprising 114,649 km of distribution lines and five distribution control centres, as well as one hydroelectric generating station, 24 thermal generating stations and 272 km of transmission lines supplying customers on off-grid systems.

## 2012 IN FIGURES

| | |
|---|---|
| Revenue | **$10.7 billion** |
| Net result | **$503 million** |
| Customers | |
| (% of revenue from electricity sales) | |
| *Residential and farm* | **43%** |
| *Commercial and institutional* | **25%** |
| *Industrial* | **29%** |
| *Other* | **3%** |
| Property, plant and equipment as at December 31 (including work in progress) | **$9.0 billion** |
| Investments in property, plant and equipment and intangible assets (including the Energy Efficiency Plan) | **$874 million** |

# An Intelligent and Efficient Grid

In 2012, the Régie de l'énergie authorized Hydro-Québec Distribution to carry out phase 1 of its remote meter reading project, namely the installation of next-generation meters as part of the deployment of an advanced metering infrastructure (AMI). AMI technology, which has been adopted by several leading utilities, is already an industry standard. For the Distributor, this represents a major step towards achieving three key goals: ensure the long-term operability of the meter fleet, improve operating efficiency and pave the way for a smart grid that will enable us to offer new services and optimize facility management.

The quality of our performance and services is a direct reflection of the ongoing contribution made by our personnel. The exceptional commitment of employees and partners was especially apparent after the storm of December 21, 2012, which caused a vast number of outages in some regions of the province. More than 800 lineworkers, cable workers, tree trimmers and other specialists worked tirelessly for a week to restore service to some 120,000 homes. Earlier in the year, 350 lineworkers, cable workers and others helped restore power to residents of several U.S. states in the wake of Hurricane Sandy—the largest support mission ever deployed by the company. In January 2013, the Edison Electric Institute honored Hydro-Québec with an Emergency Assistance Award in recognition of its remarkable contribution during this mission, as well as its help in Maryland during the summer, when some 30 Hydro-Québec crews supported the local utility after severe thunderstorms struck the area. It is the second year in a row that Hydro-Québec has been awarded this honor.

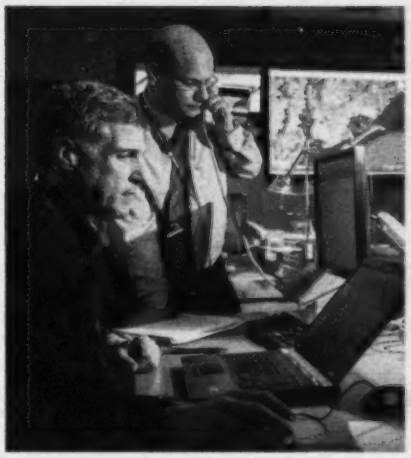
## MANAGING SUPPLY RESOURCES

*Our supply strategy makes use of a flexible and diversified energy portfolio that enables us to ensure reliable electrical service at the lowest cost in spite of unforeseeable fluctuations in demand.*

- In July, further to a decision by the Québec government, the Régie de l'énergie approved a new target of 300 MW for the power purchase program for forest biomass cogeneration, launched in December 2011. In 2012, we signed six contracts under this program for a total capacity of 167.5 MW. Two plants with a combined capacity of 59.7 MW have already begun supplying us with electricity.
- In 2012, further to the 2009 call for 125 MW of biomass generation, four new generating stations began making deliveries for contract power totaling 27.5 MW.

*Hydro-Québec Distribution's supply strategy makes use of a flexible and diversified energy portfolio.*

- In November, Hydro-Québec Distribution filed a second progress report on the Electricity Supply Plan 2011–2020 with the Régie de l'énergie. This follow-up provided an updated demand forecast for the Québec market and outlined the events that have influenced supply planning and the division's actions since the plan was filed in November 2010.
- In 2012, the Phase 2 turbines of Gros-Morne wind farm went into operation, marking the completion of all the projects associated with Hydro-Québec Distribution's 2003 call for 1,000 MW of wind power. Furthermore, the first three wind farms built in response to the 2005 call (2,000 MW)—Montérégie, Le Plateau (Gaspésie–Îles-de-la-Madeleine) and Saint-Robert-Bellarmin (Estrie and Chaudière-Appalaches)—began delivering electricity, bringing the installed wind



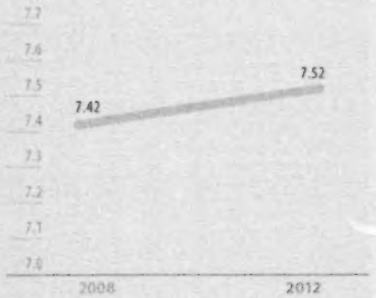
In the emergency room of the distribution system's provincial coordination centre, Dan Mastrocola, Engineer – Maintenance Strategy, and Stéphane Lemire, Advisor – Strategies, coordinate lineworkers in the field during special operations.

In February 2012, a severe ice storm seriously damaged the power system on the Îles-de-la-Madeleine. Many line crews from across the province joined local teams to help restore service.

power capacity contracted by Hydro-Québec Distribution to 1,137.3 MW. The other wind power projects resulting from the 2005 call for tenders are moving ahead at a good pace, as are those from the 2009 calls (2 x 250 MW).

- After consulting with local authorities, we launched studies into the possibility of carrying out two wind-diesel hybrid projects, one on the Îles-de-la-Madeleine and the other in the Inuit village of Kangiqsualujjuaq, in Nunavik. This technology would help reduce the fossil fuel consumption of off-grid generating stations, thus reducing air emissions.

**RESIDENTIAL, COMMERCIAL AND BUSINESS CUSTOMER SATISFACTION (OUT OF 10)**




## ONGOING INITIATIVES IN ENERGY EFFICIENCY

*Our energy efficiency initiatives generated new savings of 1,118 GWh in 2012, for a total of 7.6 TWh in cumulative savings since 2003. Innovation and the development of programs geared to the needs of our different customer categories form the cornerstones of our Energy Efficiency Plan.*

- The Electronic Thermostats for Rental Properties program enjoyed continued success in 2012, with the installation of 290,430 devices. In all, 849,600 thermostats have been installed under this program, which had an initial target of 440,000 units by June 2013. More than 90% of the components of the old thermostats are recycled.
- The Refrigerator Replacement for Low-Income Households program rolled out to two more regions in 2012: Abitibi-Témiscamingue and Saguenay–Lac-Saint-Jean. Some 8,782 energy-hungry fridges have been replaced since the program began.
- The Lighting program for residential customers offers various rebates on the purchase of LED bulbs and fixtures with a view to popularizing energy-efficient technologies and inciting manufacturers to enhance their offerings of these highly efficient products.

*Hydro-Québec Distribution made substantial efforts to improve all aspects of the customer experience.*

*Our energy efficiency programs generated new savings of 1,118 GWh in 2012.*

- An LED Public Lighting component for institutional customers was added to the Buildings program. Its objective is to reduce electricity consumption in municipal and other government buildings.
- In September, Hydro-Québec recognized 13 organizations for their remarkable energy efficiency efforts. Nine of them joined the Energy Savers' Circle after reducing their consumption by 5% or 50 GWh a year. Four others, which were already members of the Energy Savers' Circle, attained Elite member status thanks to their outstanding performance.
- In June, Hydro-Québec earned ENERGY STAR® market transformation awards in two categories: Utility of the Year – Provincial, and Promotional Campaign of the Year. Hydro-Québec has obtained 11 ENERGY STAR awards since Natural Resources Canada began recognizing leaders in the promotion of energy efficiency.

## TAILORING OUR SERVICES TO MEET CUSTOMERS' NEEDS

*In 2012, Hydro-Québec Distribution made the customer experience a priority. The division looked to industry best practices to improve both how it greets customers and the range of services it offers.*

- In March 2012, the Régie de l'énergie approved an across-the-board electricity rate reduction of 0.45%, effective April 1, 2012.
- In 2012, 29% of disconnection and connection requests during the moving season were made online or through our interactive voice response system, compared with 25% in 2011. These results reflect the division's efforts to encourage customers to use its self-service options, which are designed to provide quick and efficient service.
- Online Billing continues to gain in popularity, with some 88,000 additional customers opting for this service in 2012. In all, 556,000 customers have given up paper bills, allowing us to avoid printing 5.5 million bills per year.
- Hydro-Québec offers special payment arrangements to low-income customers who are having trouble paying their electricity bills. In 2012, we entered into 57,567 such arrangements, for arrears of $237 million.

1 On November 2, 2012, some 60 Hydro-Québec employees made their way to Long Island in 25 trucks. Their mission: to help get New York's power system back online after the devastation inflicted by Hurricane Sandy.

2 Our commercial for Dare to Compare, a service that lets residential customers compare their electricity consumption against that of similar households, won a NOMIX award from the Regroupement des producteurs multimédia du Québec, a group representing Québec's multimedia producers.

### HYDRO-QUÉBEC DISTRIBUTION'S INVESTMENTS, EXCLUDING THE EEP[a] ($M)

| | **2012** | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| Development | **336** | 326 | 346 | 325 | 308 |
| Asset sustainment (reliability and long-term operability) | **394** | 407 | 382 | 384 | 356 |
| Total | **730** | 733 | 728 | 709 | 664 |

a) EEP: Energy Efficiency Plan

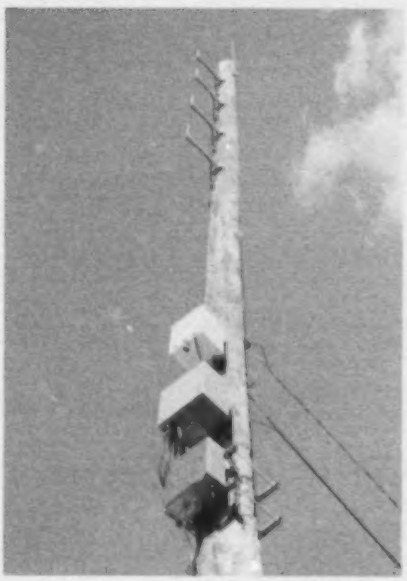
1

2

## TOWARD THE DISTRIBUTION SYSTEM OF THE FUTURE

*Hydro-Québec Distribution continued to invest in the development, reliability and long-term operability of its facilities in order to ensure high-quality electrical service. Our main project on this front is the deployment of an advanced metering infrastructure that will help the system evolve in two ways: first, by improving system management and optimizing operational processes within the division, and second, by providing new services including helping customers better manage their consumption.*

- In October, the Régie de l'énergie approved phase 1 of the remote meter reading project, i.e., the installation of 1.7 million next-generation meters and associated information and communication technologies in greater Montréal by 2014. By 2018, we plan to replace 3.75 million meters as part of the rollout of a Québec-wide advanced metering infrastructure, which will provide a number of advantages including billing based on actual readings rather than estimates, and remote operations (readings, outage detection, connection and disconnection when customers move, etc.).
- As part of the distribution automation program, we installed 489 remote-controlled switches and breakers in 2012 (3,521 since 2006). By the time the program wraps up in 2013, some 3,600 such devices will have been installed at strategic points on the system, allowing us to reduce outage duration.



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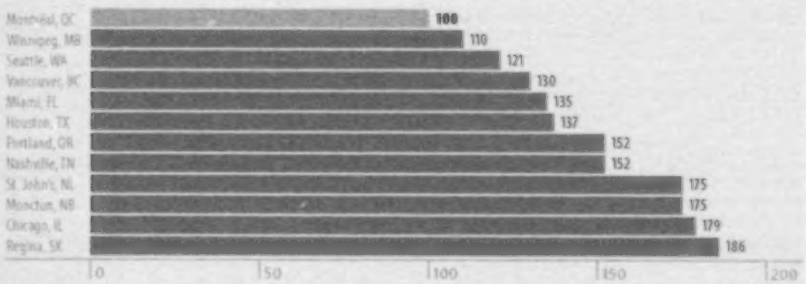
- Under the CAIVAR project (voltage regulation and reactive power control), Hydro-Québec Distribution installed 87 pieces of equipment for regulating and measuring line voltage. Upon completion, this project will yield energy savings of 2 TWh annually through more precise voltage regulation.
- In 2012, we fulfilled 51,431 hookup requests on schedule, at a total cost of $184 million.

**COMPARATIVE INDEX OF ELECTRICITY PRICES AT APRIL 1, 2012 – RESIDENTIAL CUSTOMERS[a]**




a) Monthly bill (before taxes) for a consumption of 1,000 kWh.

## INNOVATING TO IMPROVE DISTRIBUTION SERVICE AND ENERGY EFFICIENCY

*Hydro-Québec Distribution counts on innovation to enhance system performance and intelligence, improve the efficiency of technical fieldwork and support energy efficiency and sustainability efforts. In 2012, the division invested $21 million in innovation projects carried out in conjunction with Hydro-Québec's research institute, IREQ.*

- IREQ developed a remote manipulator capable of lifting 25-kV conductors. This tool will be used to carry out various types of maintenance tasks, such as replacing distribution poles, without interrupting service. This provides sizable advantages in terms of greater safety and shorter work duration. After testing a prototype under real life conditions, in 2012 IREQ mandated Movex Innovation, a Québec company, to manufacture the manipulator for commercial distribution.
- MILORD technology (automated fault location for service restoration) was deployed in a dozen substations in 2012. Designed to speed up fault location and service restoration, this technology will be rolled out to all distribution substations by 2015.
- IREQ's energy technologies laboratory (LTE) helps companies make more efficient use of electricity to increase their competitiveness. In 2012, together with FPInnovations, Québec's Ministère du Développement économique, de l'Innovation et de l'Exportation, and several industrial partners, LTE launched a project to develop a process using high-frequency waves in a vacuum to dry lumber. The objective of this project is to reduce the rejection rate and produce wood with high added value.
- A consortium composed of LTE, the U.S. Department of Energy, Lawrence Berkeley National Laboratory, California Energy Commission, Trane, Infosys and Digital Alchemy has developed and distributed a beta version of the Simergy software. Designed to perform advanced energy simulations for commercial and institutional buildings, Simergy complements the SIMEB software (building energy simulation) developed by LTE.
- Using two test houses built on the LTE site, in 2012 we conducted tests on the effects of ventilation and zone set temperature modulation on energy consumption and power demand. This full-scale test bench, part of the program to investigate the energy efficiency of buildings, looks to study comfort factors, find new opportunities for energy savings and guide energy efficiency efforts.

1 Representative Donald Manis working in the Esplanade customer relations centre.

2 The Public Lighting component of the Buildings Program provides financial support to institutional customers to replace energy-hungry lighting fixtures and luminaires with LED units.

3 From top to bottom: modem, collector and control box for Hydro-Québec's advanced metering infrastructure. The collector assembles the data gathered by meters and transmits it to the head-end data server, which in turn sends it to the data management system.

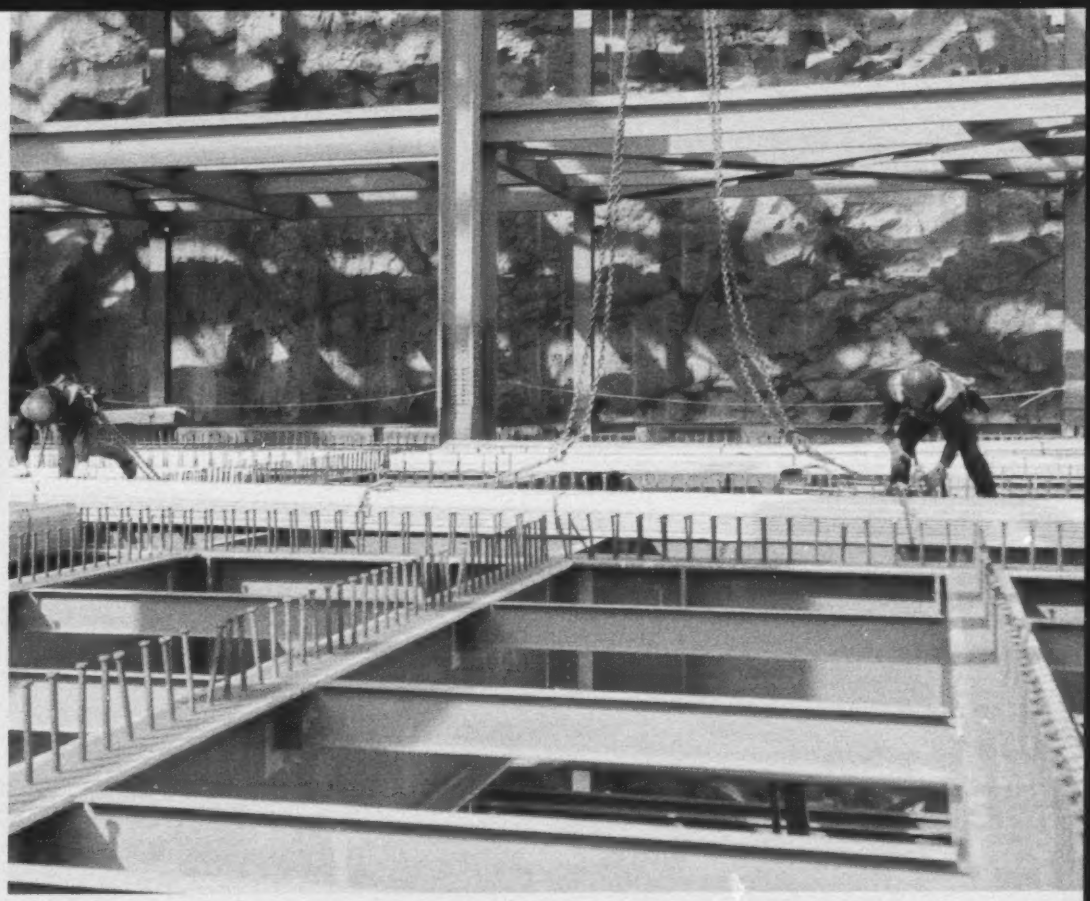
4 Live-line work in Repentigny, a suburb of Montreal.

5 Assigning tasks for the extension of an overhead line in the Laurentides. From left to right: apprentice lineworkers Jessy L. Thomen, Kevin Morin and Vincent Lefebvre; line crew chiefs Bertrand Thibault and Claude Legault; and apprentice lineworker Maxime Plouffe.

6 Pascale Ouellette, Marketing Manager – Product-Related Programs, receives an ENERGY STAR® award from Natural Resources Canada's David Anderson. Hydro-Québec earned two ENERGY STAR awards in 2012: Utility of the Year – Provincial and Promotional Campaign of the Year.

# HYDRO-QUÉBEC ÉQUIPEMENT ET SERVICES PARTAGÉS AND SEBJ

**Réal Laporte**
President
Hydro-Québec Équipement et services partagés
President and Chief Executive Officer, Société d'énergie de la Baie James



Erecting the steel framework for the service area at Romaine-2 generating station.

**OUR MISSION** Hydro-Québec Équipement et services partagés (HQESP) and Société d'énergie de la Baie James (SEBJ) design and carry out projects for the construction and refurbishment of generating and transmission facilities that optimally meet Hydro-Québec's needs. Working in partnership with host communities and industry, we offer high-quality, cost-effective solutions that apply best practices in social and environmental acceptability. Furthermore, through the Centre de services partagés (shared services centre), HQESP offers real estate management, materials management, procurement, transportation and other services to all Hydro-Québec divisions and corporate units.

**OUR ACTIVITIES** Our services cover all project stages and aspects: management, communications with stakeholders, permitting, field surveys and geomatics, biophysical and human environment studies, design and implementation of environmental measures, engineering, procurement, construction, health and safety, in-plant and on-site quality assurance, and project management up to handoff to the operator. We are constantly seeking new ways to maximize facility performance and reduce costs and construction time.

## 2012 IN FIGURES

| | |
|---|---|
| Volume of activity | |
| *Construction* (HQESP and SEBJ) | **$2.3 billion** |
| *Shared services* | **$0.5 billion** |
| Main customers – Construction | |
| *Hydro-Québec Production* | **51%** |
| *Hydro-Québec TransÉnergie* | **48%** |

# Experts in Our Field

At Hydro-Québec Équipement et services partagés and Société d'énergie de la Baie James, our volume of activity totaled $2.8 billion in 2012: $2.3 billion for more than 1,200 construction projects and $0.5 billion for shared services. Whether building lines or generating stations, refurbishing turbines or upgrading substations, the challenges are huge, but our employees once again made an outstanding effort to meet the deadlines and find solutions suited to each project.

In terms of generating projects, the January 2012 commissioning of the last unit at Eastmain-1-A powerhouse in the Baie-James region represented an important milestone. In Minganie, a region known for its hilly terrain, we extended the road along the Rivière Romaine as far as the site of Romaine-3, 117 km inland. Farther downstream, our teams were busy erecting Romaine-2 dam and excavating the site of Romaine-1 generating station.

It was a particularly full year for transmission-related activities. Among other things, we finished connecting seven wind farms, started rolling out the Romaine-2–Arnaud line, commissioned Limoilou substation and broke ground on Bélanger and Lachenaie substations.

Finally, we carried out refurbishment at 17 generating facilities and 102 substations all over the province, in connection with projects that are on a smaller scale but are just as essential to our customers, namely Hydro-Québec Production and Hydro-Québec TransÉnergie.

## HIGH-QUALITY STRUCTURES DELIVERED ON TIME

*For all our generation and transmission projects, we take care to optimize every stage, from planning through to execution and site restoration. To improve efficiency, we count on precise scheduling, work methods tailored to each situation and proven logistics based on reliable management systems. In addition to project profitability, quality of structures and on-time delivery, two imperatives guide all our activities: worker safety and compliance with the principles of sustainable development.*

### VOLUME OF CONSTRUCTION ACTIVITY ($B, FINANCING EXCLUDED)

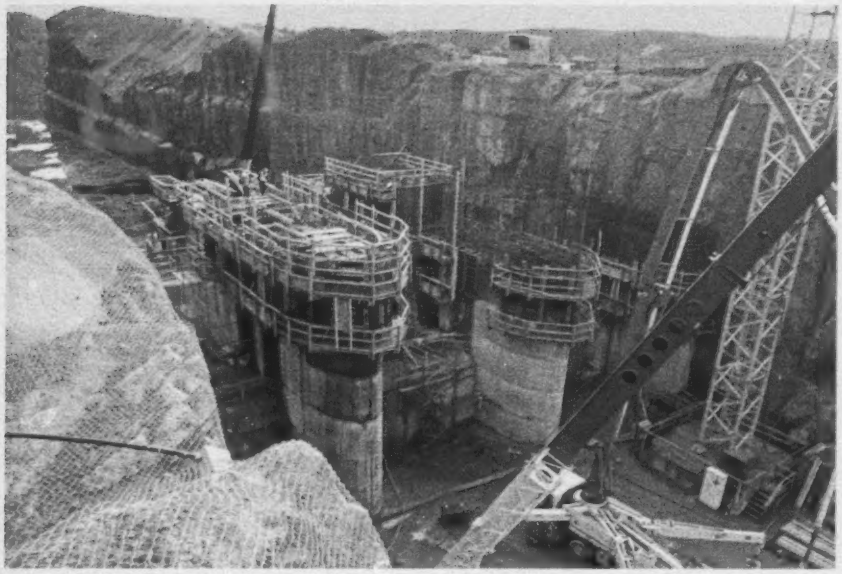
| 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|
| **2.3** | 2.1 | 2.6 | 2.6 | 2.4 |

### KEY ACHIEVEMENTS IN GENERATION PROJECTS

- In the Baie-James region, the third and final unit at Eastmain-1-A powerhouse went into operation in January 2012. As well, we completed the concreting and installed electrical and mechanical systems at Sarcelle powerhouse, with a view to commissioning its three units in 2013. Mitigation measures related to the partial diversion of the Rupert included building roads, snowmobile trails, portages and campsites to help the Crees resume their use of the land. We also modified the water intake supplying the village of Waskaganish, adapting it to the new level of the Rupert. Finally, at the provincial authorities' request, we held consultations with the six Cree communities affected by the Rupert diversion to learn their views on the effectiveness of mitigation measures implemented thus far.

*As prime contractor, we manage all aspects of the projects we are entrusted with, from planning and design to execution at the jobsite.*

On the Bout-de-l'Île substation jobsite, Stéphane Briand, the contractor's Advisor – Health, Safety and Environment, in discussions with HQESP safety advisors Jacques Simard and Johanne Doucet.



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*Hydro-Québec's approach based on dialogue with workers and all stakeholders makes it a model in the field of health and safety.*

- At the Romaine-2 jobsite in Minganie, we finishing excavating the 5.5-km headrace tunnel and concreting the intake. The envelope of the generating station is in place, as are most of the asphalt concrete cores of the dam and dikes.
- In Montérégie, we completed the overhaul of two units and finished replacing the windows at Beauharnois generating station.
- In the Manicouagan region, we replaced a stator at René-Lévesque generating station (formerly Manic-3) and finished the auxiliary systems overhaul at Manic-5-PA.
- In Outaouais, we overhauled one unit at Paugan generating station and one of the turbine chambers at Hull-2.
- At Carillon generating station in the Laurentides region, some of the water lines were reconditioned.
- In Abitibi-Témiscamingue, we refurbished the gates in the complementary spillway at Rapides-des-Îles generating station and the control structure and spillway at Bourque dam.

KEY ACHIEVEMENTS IN TRANSMISSION PROJECTS

- We completed construction of Limoilou substation (230/25 kV, Capitale-Nationale). The 25-kV section of this substation was built indoors—a first in 25 years—to ensure better integration into its surroundings.
- Neubois substation (120/25 kV, Chaudière-Appalaches) and its tap line went into operation. The new substation replaces Scott and Beaurivage substations.
- We completed the refurbishment and expansion of Hauterive substation (315/161/69 kV, Côte-Nord).
- In 2012, we connected seven wind farms to the transmission grid: Montérégie, L'Érable (Centre-du-Québec), Massif-du-Sud and Les Moulins (Chaudière-Appalaches), Saint-Robert-Bellarmin (Estrie and Chaudière-Appalaches), Lac-Alfred (Bas-Saint-Laurent) and New Richmond (Gaspésie–Îles-de-la-Madeleine).

## GENERATION: WORK IN PROGRESS

*Our two flagship generation projects continued to mobilize considerable efforts in 2012. At the Eastmain-1-A/Sarcelle/Rupert jobsite, which is winding down, our teams prepared for the commissioning of the bulb-type units at Sarcelle powerhouse. Work at the Romaine jobsite has now entered its peak years, with three of the complex's four developments currently under construction. At the same time, we carried out extensive refurbishment work to ensure the long-term operability of existing facilities. In all, our generation projects and studies totaled $1.2 billion of activity in 2012.*

- Eastmain-1-A/Sarcelle/Rupert project:
  - At Sarcelle powerhouse, startup and acceptance testing is under way on the three generating units, scheduled for commissioning in 2013. This means that the temporary diversion can be closed in the spring.
  - On the Eastmain-1-A jobsite, site restoration and dismantling of the workcamp are ongoing.
  - We are continuing to apply a variety of measures to mitigate the project's impacts on the surrounding environment. Among other operations in progress, we are building snowmobile trails and seeding the banks of the Rupert to prevent erosion. Most of the work has been contracted to Cree businesses. Once the project is finished, about 600 specific mitigation measures will have been implemented in this area.

Environmental follow-up will continue until 2023. It is noteworthy that, in 2010, the Observatoire des énergies renouvelables (Observ'ER) cited the Eastmain-1-A/Sarcelle/Rupert project as a prime example of how to incorporate environmental constraints.

□ In 2012, a total of $130 million (financing excluded) was invested in this project.

■ Romaine complex:

□ On the Romaine-1 jobsite, excavation got under way in preparation for construction of the main structures: generating station, headrace canal and temporary diversion tunnel. Once this tunnel is impounded in spring 2014, work on the dam can proceed in the dry.

□ At Romaine-2, construction of the dikes and concreting of the generating station and spillway are making steady progress. In addition, the turbine manufacturer has started preparations for installing the two generating units, which will develop a capacity of 640 MW when they are commissioned in 2014. We also initiated architectural and electrical and mechanical engineering work at the generating station.

□ We added 30 km to the Route de la Romaine, enabling us to build Mista workcamp at kilometre 116, right next to the Romaine-3 site. By December, the camp could already accommodate more than 200 workers. Calls for proposals were issued for the supply and installation of the generating units and construction of the temporary diversion.

□ In 2012, $650 million (financing excluded) was invested in the Romaine complex. Employment totaled 1,348 person-years, with Côte-Nord and Innu workers accounting for 40% of the labor force. Contracts awarded in the region amounted to $74 million.

■ In Baie-James, the overhaul of eight units at Robert-Bourassa generating station proceeded, with construction of the infrastructure needed to carry out the project.

■ In the Manicouagan region, we are working on the auxiliary equipment of a unit at Manic-1 generating station in order to extend its service life.

■ Major refurbishment is under way on the control structures and spillways at Gouin and La Tuque dams, in Mauricie.

■ In 2012, engineering and procurement activities went on for the following generating station projects, with on-site work slated to start up in 2013:

□ Refitting of Rapide-2, Rapide-7 and Jean-Lesage (formerly Manic-2).

□ Overhaul of six units at Beauharnois.

□ Refurbishment of gate hoisting systems at Beaumont and Trenche.

1 Formwork and reinforcement for building the Romaine-2 spillway.

2 Acoustical Engineer Franck Duchassin measures noise in a residential district with a sound level meter, one of Hydro-Québec's regular checks to assess how sound from its facilities affects surrounding areas.

3 Connecting Massif-du-Sud wind farm to the Hydro-Québec grid.

4 Laying underground conduits for the high-voltage cables that will run to the capacitor banks at Bélanger substation.

5 Constructing a 735/315-kV section at Bout-de-l'Île substation.

■ In 2012, the accident frequency rate was 5.0 per million hours worked on our jobsites. This favorable result is the outcome of the considerable efforts we have made to establish a culture of strict care in the area of health and safety. In 2010, our workplace health and safety management system earned international OHSAS 18001 (Occupational Health and Safety Assessment Series) certification. OHSAS 18001 is intended to help companies reduce occupational hazards, and we are continuing to improve our practices in this regard.

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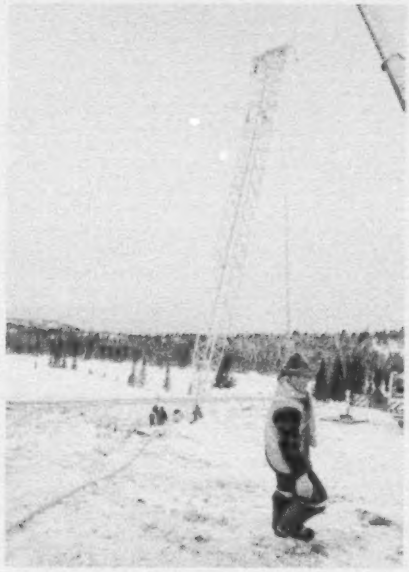

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## TRANSMISSION: WORK IN PROGRESS

*The volume of our transmission activities rose to $1.1 billion in 2012, up from 2011. The work involved refurbishing, reinforcing or extending the grid and connecting new wind farm capacity. Our largest projects are located in Minganie and in the metropolitan Montréal and Québec regions.*

■ In Minganie, we began building the 735-kV Romaine-2–Arnaud line after clearing half of the right-of-way. Construction of the Romaine-2 switchyard (18/315 kV) also moved ahead. In Manicouagan, work commenced on Outardes substation and its 735-kV lines.

■ In Lanaudière, we broke ground on Lachenaie substation (315/25 kV), Pierre-Le Gardeur substation (315/120 kV) and their tap lines.

■ In Montréal, construction continued on Bélanger substation (315/120/25 kV) on the site of the existing substation of the same name, along with a tap line for this facility. Work also proceeded on the addition of two static compensators and construction of a 735/315-kV section at Bout-de-l'Île substation, where the operating voltage is currently limited to 315 kV.

■ In the Capitale-Nationale region, work got under way on Charlesbourg substation (230/25 kV); the tap lines will follow in the coming months.

*The Romaine complex is one of the largest construction projects currently under way in Canada.*

■ In Montérégie, we began building Saint-Bruno-de-Montarville substation (315/25 kV).

■ In 2012, several projects passed key milestones in the Bureau d'audiences publiques sur l'environnement (BAPE) review process. Construction of 315/25-kV Lefrançois substation and its tap line was the subject of a public information procedure, as was construction of the 315-kV tie lines for Seigneurie-de-Beaupré and Rivière-du-Moulin wind farms in the Capitale-Nationale region and of 315/25-kV Blainville substation and its tap line in Basses-Laurentides. In addition, we filed the environmental impact statement for the construction of Duchesnay substation (315/25 kV) and tap line (Capitale-Nationale).

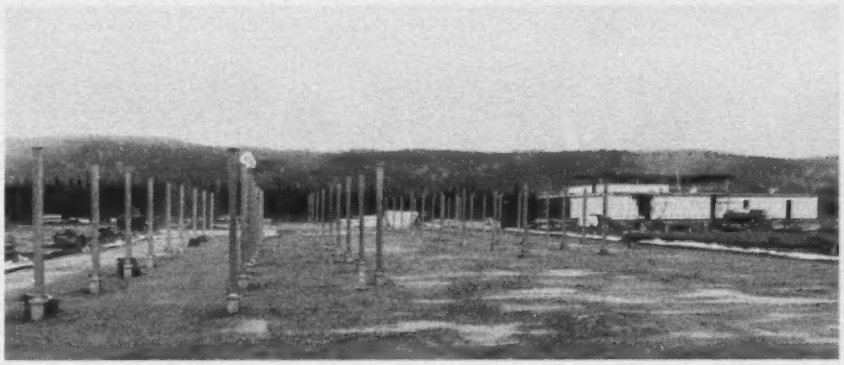
## INNOVATIONS ROOTED IN REALITY

*All our projects are geared to meet the same basic requirement: provide high-quality equipment at the best cost in the shortest time possible. To do that, we rely on a highly qualified, totally committed staff who are able to innovate when they face fresh challenges.*

■ Romaine-2 gave Hydro-Québec the opportunity to break new ground on several fronts.

□ Since moraines are few and till is scarce in the region, we opted for asphalt concrete cores to make the dam and dikes impervious. We had tested the technique in 2008 on a smaller structure, Nemiscau-1 dam in the Baie-James region, to become familiar with the method and optimize it to our needs.

□ We used a geotechnical baseline report (GBR) to prepare the call for tenders for excavating the headrace tunnel and to track the work. The report sets out geological parameters at the tunnel site as a baseline for specifying the work, thus facilitating bid preparation. It also helps to better share risks between the client and the contractor, minimize unforeseen costs and avoid contract interpretation disputes.



□ We built the generating station envelope in less than one year by using steel structures and prefabricated concrete panels rather than cast-in-place concrete.

□ For the contract for concrete work on Romaine-2 structures, we created a dispute resolution board, an increasingly common mechanism in the United States and other countries around the world. The members are construction specialists, who assist the parties to the contract and visit the jobsite regularly. The board can give an oral or written opinion on any dispute between the parties as it arises, thus avoiding lengthy settlement procedures after the contract ends.

■ We continue to use CATIA (Computer-Aided Three-dimensional Interactive Application) to optimize the planning and performance of engineering and construction work. With CATIA, 3D models covering all aspects of a project can be created. This makes it easier to plan the work and to evaluate the time and quantities of materials needed at each step.

■ In 2012, we used high-resolution stereo satellite images to produce digital models of potential sites for certain structures. The 3D images are also useful for such purposes as geological, forestry and environmental studies.

■ When maintenance jobs entail equipment outages at a substation, temporary 120-kV cables must be installed to keep the substation in service. This is a time-consuming operation with potential risks due to space constraints. We therefore designed and tested portable cables that can be installed in less than five days. The cables are insulated and have flexible ends. We have also developed a reel and protective sleeves to move and install them. A custom-made frame completes the assembly. These reusable cables are an efficient, cost-effective solution on our jobsites and are even used permanently at some generating stations for specific applications.

1 First sections of penstock linings arriving at the Romaine-2 jobsite in March 2012.

2 Erecting a V-tower for the Romaine-2–Arnaud line.

3 Installing electrical equipment in the control room at Saint-Bruno-de-Montarville substation.

4 The Hautevie substation refurbishment and expansion project was completed in 2012.

5 To underpin Romaine-2 substation, steel rather than conventional cast-in-place concrete foundations were chosen. Already used in a number of recent projects, steel foundations have two advantages: quicker installation and lower labor costs.

# TECHNOLOGICAL INNOVATION: PREPARING THE FUTURE

At IREQ, technician Jean-Philippe Charest-Fournier adjusts the rotor of a model generator used in the AUPALE numerical modeling project, which aims to increase the capacity of generators without shortening their service life.

At Hydro-Québec, technological innovation plays a pivotal role in optimizing the existing power system and extending its life, as well as in making the future grid smarter, more automated and more flexible in order to serve customers better. To achieve this, the company counts upon top-notch scientific expertise and technical know-how not only in electrical disciplines but also in information and communication technologies, the keystone of tomorrow's grid.

Our innovation efforts are primarily carried out by IREQ, Hydro-Québec's research institute, under the Groupe – Technologie. With an annual budget of $100 million, IREQ has a number of leading-edge facilities, including LTE, our energy technologies laboratory, which turned 25 in 2012. Though work at IREQ now focuses on power system intelligence, reliability and long-term operability, its 500 scientists, engineers, technicians and other specialists are also active in other areas: wind power integration, emerging sources of renewable energy, energy eco-efficiency for industry and buildings, battery materials for electric transportation and bulk energy storage, etc.

IREQ runs its projects hand in hand with the Hydro-Québec divisions concerned, supported by computer and communications specialists in the Groupe – Technologie. Hydro-Québec devotes considerable effort to modernizing its telecommunications network, integrating the information and communications systems underlying all of its activities, and improving computer security, including cybersecurity.

## ENERGY PERFORMANCE

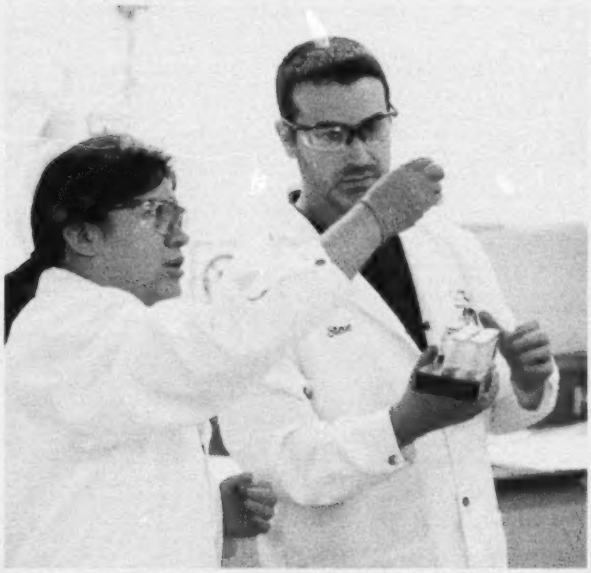
*IREQ devotes substantial resources to research on technological solutions for improving the energy performance of Hydro-Québec facilities and those of its customers.*

- Several key stages of REPERE, a project to optimize transmission system performance, were completed in 2012. For instance, we enhanced the robustness of the state estimator, which provides a reliable real-time estimate of the state of the power system. We also improved the display and characterization of electrical losses on the grid so it is now easier to distinguish losses that raise conductor temperature (Joule effect) from those that create discharges (corona effect).
- Working with Hydro-Québec Production and in collaboration with Hydro-Québec TransÉnergie, we launched SIGOR, a project to develop an integrated reactive power management system in order to minimize generating facility electrical losses and optimize power factor management.

## WIND POWER

*Playing a crucial role in the development of wind power in the province, Hydro-Québec has directed IREQ to conduct research on the integration of this intermittent energy source. Our experts are also working on ways to tap the potential of emerging renewables.*

- IREQ is pursuing research into wind and wind energy forecasting to maximize the contribution of this variable energy resource without compromising power system reliability.
- We continue to develop and improve various tools and models for simulating wind turbines and farms in order to study how bulk wind energy affects power systems.
- With Hydro-Québec Production, we developed a dynamic calculation method for contingency provisions, the power that must be reserved to deal with uncertainties related to electricity demand, generator output and equipment failures. The purpose of calculating contingency provisions dynamically is to optimize reserves based on an acceptable level of risk.
- We are participating in studies initiated by Hydro-Québec Distribution to support two pilot projects on hybrid wind-diesel plants for off-grid systems.



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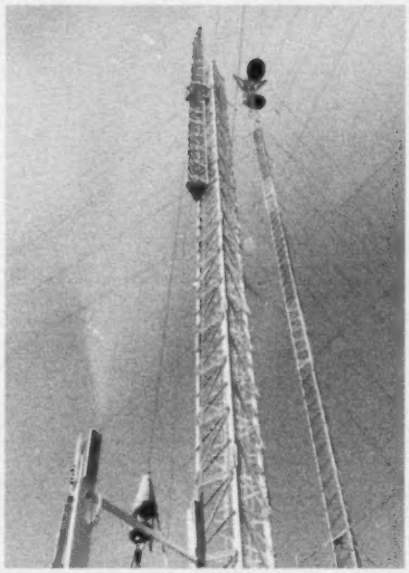

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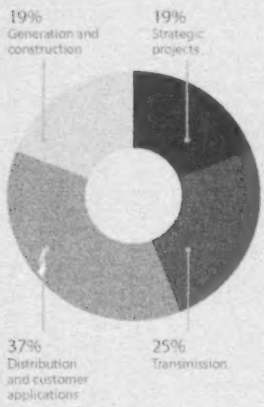
1. Researcher Esperanza Mariela Rodriguez Celis and technician Steve Duchesne of the materials science team in IREQ's analytical chemistry laboratory.

2. Assembling the Prévert tower in the 3M (Manicouagan–Manic-5–Montagnais) project. While modernizing, we continue to enhance communication network security in order to ensure compliance with ISO 27001 and NERC requirements.

**BREAKDOWN OF IREQ INNOVATION EFFORTS IN 2012 (BY AMOUNT INVESTED)**




■ We studied the generation potential of commercial low-power wind turbines and concluded that, under present conditions, such technology would not be cost-effective in Québec.

■ We continue to study salinity gradient energy, its generating potential and its applications. Under a three-year cooperative agreement with the Statkraft Group of Norway, IREQ will study an important aspect of salinity gradient generation: freshwater pretreatment.

## SMART POWER GRID

*Progress towards an increasingly smart and automated grid mobilizes IREQ researchers and a broad array of specialists in the company and its divisions, especially computer and communications experts. This high-priority goal is pursued in partnership with industry (particularly ABB, Alstom Grid, Ericsson and IBM), several Québec universities, government departments and various research organizations.*

■ In 2012, Hydro-Québec spelled out the technological priorities of its Smart Grid innovation program for 2012–2017. The priorities are geared toward six major targets:

- Increased transfer capability
- Reduced grid losses
- Optimized asset management
- Fewer and shorter outages
- Load and distributed resource management
- Deployment of a scalable ICT architecture

IREQ is coordinating some 20 projects under the Smart Grid program. These include a major effort to integrate digital technologies and advanced protections and controls for greater overall power system efficiency.

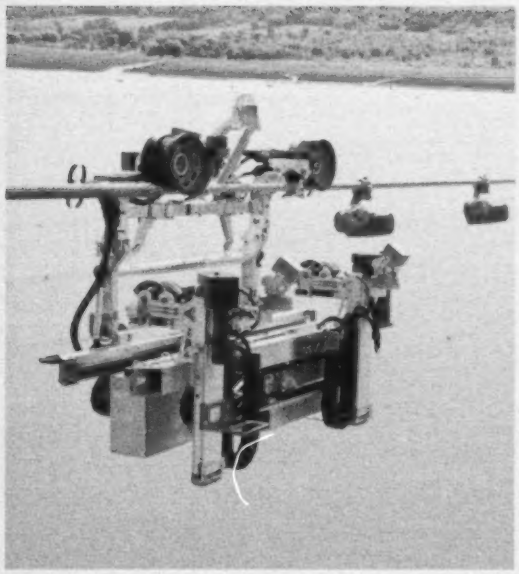
## ENERGY STORAGE AND CONVERSION

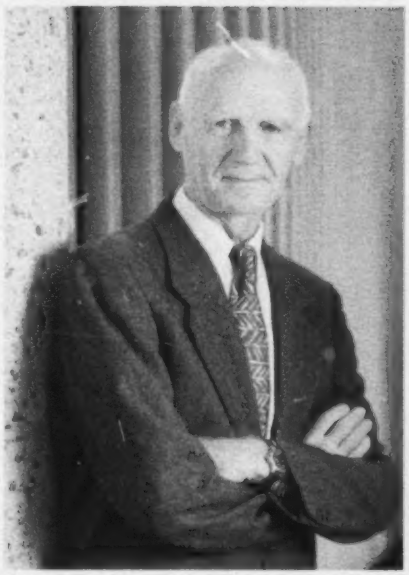
*In 2012, IREQ continued its energy storage and conversion efforts on several fronts: research, design and development, licensing patents for advanced materials, etc. Ongoing work includes research on the physical components (powders and solvents) of high energy and power density lithium-ion batteries for electric vehicles and such stationary applications as supplying electricity to residential buildings and supporting power system security. In the latter area, a bank of lithium iron phosphate batteries was tested as a means to black-start generators at La Gabelle generating station in Mauricie. The storage solutions developed at IREQ are not only greener than conventional batteries but also much safer, and they perform much better (for more information, see Innovation Serving Ground Transportation on page 37).*

## INFORMATION AND COMMUNICATION TECHNOLOGIES

*Two factors make information and communication technologies (ICT) a priority for Hydro-Québec: they play a key role in all company activities, and they must be integrated to an ever greater extent into all power system components, particularly control systems, as a smarter grid is developed.*

■ ICT experts from the Groupe – Technologie are participating actively in the deployment of Hydro-Québec Distribution's advanced metering infrastructure.





1 In 2012, LineScout, a robot designed by IREQ to inspect transmission lines, earned Hydro-Québec an innovation award from the Institution of Engineering and Technology, one of the world's largest engineering and technology societies.

2 IREQ researcher Michel Duval, recipient of the IEEE Herman Halperin Electric Transmission and Distribution Award for development and leadership in the condition monitoring of high-voltage power transformers and related equipment.

3 Data processing centre of the Direction principale – Technologies de l'information.

4 At Rio Tinto Alcan's Chute-des-Passes generating station, IREQ's Scompi robot machines the sealing surface of a spherical valve, used to shut off flow upstream of the turbine scroll case in high-head applications.

□ In 2012, we ran a pilot project to install a head-end server and meter data management system (MDMS) to handle the data collected by next-generation meters.

□ We continued installing the telecommunications plant for two-way data interchange between the meters and Hydro-Québec's information systems.

■ We continued to implement the 2011–2014 corporate ICT security program, designed to ensure system availability and integrity as well as data confidentiality.

## TELECOMMUNICATIONS

*Massive amounts of data must be transmitted to operate an increasingly complex and increasingly smart grid. Hydro-Québec's telecommunications network must therefore be modernized through such initiatives as the move to digital microwave links and the implementation of NG-SONET/IP-MPLS. The many advantages anticipated include extended service life of facilities, optimized grid management, enhanced security, better performance, new advanced functionality and self-service options. The telecommunications network must also keep pace with the growing generating fleet and transmission grid.*

■ Rollout of the digital microwave network made considerable progress in 2012. In southern Québec, we deployed digital links between Boucherville, Varennes, Carignan and Duvernay substations. In Côte-Nord, we commissioned the Hart-Jaune–Manic-5 link, the first of some 20 links in the 3M (Manicouagan–Manic-5–Montagnais) loop.

■ Montérégie, New Richmond, Lac-Alfred, Massif-du-Sud and Les Moulins wind farms were connected to the Hydro-Québec telecommunications network in 2012.

■ In the Côte-Nord region, we completed the connection to Mista workcamp near the Romaine-3 site.

■ We finished the Est-du-Québec loop (Lévis, Rimouski, Baie-Comeau and Chamouchouane) of the IP-MPLS backbone network that will connect 208 administrative buildings and operating facilities by 2017. Sixteen telecommunications sites have thus far migrated to the backbone network. The Nord loop (Rouyn and Baie-James) is the next one slated for deployment.

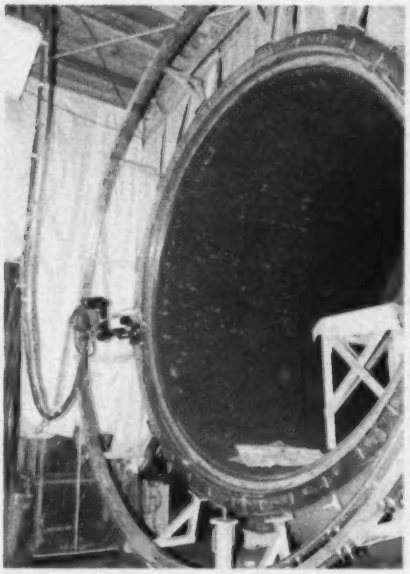
■ We started a project to phase over from conventional telephony to an IP solution. This would ultimately unify all company communications: fixed and mobile telephony, collaborative work tools (instant messaging, audio and video Web conferencing, screen sharing, etc.) and telephony-IT integration, like click-to-talk service.

■ We started deployment of a high-speed wireless WiMAX network that will connect half a dozen gauging stations to Les Cèdres generating station, as part of a pilot project that will continue in 2013.

■ We finished removing and replacing petroleum product tanks on company telecommunication sites to meet new Québec government environmental regulations.

## INFORMATION TECHNOLOGY

*Modernizing the power system creates substantial needs in information technology. Top-performance information systems are needed to support the sophisticated applications and tools implemented in a smart grid. Furthermore, a robust, highly scalable architecture is needed to process, integrate and store an ever-growing mass of data from very different sources.*



■ In 2012, IT experts from the Groupe – Technologie contributed to a number of major corporate projects.

□ To help optimize maintenance systems, we added features to SAP to support new maintenance processes at Hydro-Québec Distribution and Hydro-Québec TransÉnergie and to enable employees to enter their own timesheet data. Efforts in this regard will continue in 2013.

□ To improve the customer experience, we worked on transitioning the company Web site to a portal-type design to facilitate communications with all of our customers. In 2013, there will be a major upgrade to interactive voice response.

■ We pursued our continuous improvement approach, aligning our methods and processes with IT industry best practices.

□ To support the management of IT services, we completed several steps in the deployment of ITIL (Information Technology Infrastructure Library) and the development of a virtualization service. We finished consolidating and standardizing physical and virtual servers, and installing the storage infrastructure for information life cycle management.

## OPEN INNOVATION

*Following our open innovation policy, we reached a number of partnering arrangements with university, institutional and industrial collaborators. This approach allows us to share costs and risks while gaining access to complementary expertise.*

■ In 2012, Hydro-Québec contributed $6.2 million to Québec universities in research partnerships and contracts, and in funding for 17 research chairs.

■ In collaboration with the Ouranos consortium on regional climatology and adaptation to climate change, we participated in a study to gain a comprehensive view of the potential impacts of climate changes on Québec water resources.

■ In 2012, we forged 58 partnerships with public and private research players inside and outside Québec. Hydro-Québec is now involved in more than 170 partnerships, which create excellent exposure for Québec expertise and provide access to an international pool of skills that are hugely beneficial from both a technical and an operational standpoint.

□ With IBM (U.S.), we signed an agreement regarding the creation of the Smarter Energy Research Institute (SERI), a new industrial research collaboration model aimed at accelerating innovation across the global energy and utilities market. The first to join alongside us were two energy companies, Alliander (Netherlands) and DTE Energy (U.S.).

□ With Laborelec (Belgium), we reached a research collaboration framework agreement on generators, cables and smart grids.

□ With Ericsson, we signed a research collaboration agreement covering smart grid technologies, data communication infrastructure and architectures, advanced wireless technologies, data security and sustainable development technologies.

□ With National Grid (U.K.), we entered into a scientific partnership to develop a corrosion detector for the LineScout robot. Before the Olympic Games in London, National Grid inspected and repaired major power lines in record time using the robot. We also granted a licence to State Grid Corporation of China allowing it to market LineScout technology in China.

# GROUND TRANSPORTATION ELECTRIFICATION

Technician Francis Barray checks the quality of an aluminum collector for batteries made by IREQ to test the advanced materials it develops.

Climate change must be fought on several fronts, including transportation, a sector that weighs heavily in the overall $CO_2$ emissions balance. That is why Hydro-Québec is strongly committed to ground transportation electrification. Many achievements in 2012 attest the growing strength of this commitment: road trials, deployment of public charging stations, participation in studies on public transit electrification, R&D partnerships and marketing agreements for motor systems and battery materials, etc.

## ROAD TRIALS AND CHARGING INFRASTRUCTURE

- As part of The Electric Circuit, Canada's first public charging network, an initial series of 240-V charging stations, located in the parking lots of founding partners Les Rôtisseries St-Hubert, RONA, METRO, the Agence métropolitaine de transport (AMT) and Hydro-Québec, was inaugurated in March 2012. By the end of the year, The Electric Circuit had nearly 150 charging stations in service and 20 new partners in many regions: Montréal, Québec, Laval, Montérégie, Estrie, Laurentides, Lanaudière, Outaouais, Bas-Saint-Laurent and Chaudière-Appalaches.
- In September, Hydro-Québec began work with Plug'n Drive Ontario, a non-profit organization promoting electric mobility, to create an Ontario/Québec public charging network with rollout starting in the Ottawa-Gatineau area.
- In October, specialists from Hydro-Québec, Green Mountain Power and the Vermont government formed a task force on public charging infrastructure to support the planned "green corridor" between Montréal and Burlington.
- The road trials led by Hydro-Québec at Boucherville passed a milestone in spring 2012 with the installation of a fast-charge station (400+ volts) in a St-Hubert restaurant parking lot.
- In October, Hydro-Québec hosted Electric Mobility Canada's EV 2012 VÉ Conference and Trade Show. It was the fourth such event and a record breaker, attracting 563 delegates and 37 exhibitors. The program included nearly 70 plenary and workshop sessions. Electric Mobility Canada took the opportunity to present Hydro-Québec with an award of excellence for its outstanding contribution to the promotion and development of electric transportation.
- In late 2012, Hydro-Québec received a second delivery of 10 Chevrolet Volts for its fleet under an agreement with the automaker to purchase 20 extended-range vehicles.

## PUBLIC TRANSIT

*Hydro-Québec's commitment to public transit electrification takes the form of technical and financial support for feasibility studies in projects run by public transit authorities.*

- In 2012, Hydro-Québec collaborated in four more feasibility studies with the proponents of the following electrification projects: Montréal streetcars – Société de transport de Montréal; Laval aerial tramway – Société de transport de Laval (STL); tramways in Québec and Lévis – Réseau de transport de la Capitale and Société de transport de Lévis; and electric taxis – Comité provincial de concertation et de développement de l'industrie du taxi.
- Clic carpoolers have traveled over 50,000 km by all-electric means since the STL launched the program with the support of the AMT and Hydro-Québec. A Clic carpool is simply four people, living in the same neighborhood and commuting to work together, who receive a Chevrolet Volt to drive to an electric public transit station. This reduces both their fuel consumption and their environmental footprint.

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1 Hydro-Québec stand at the 45th Montréal International Auto Show.

2 Metrology technician Éric Perreault measures the voltage of the battery for the TM4 MΦTIVE motor system used for V2G and V2H tests.

## ELECTRIC MOTORS

- In May 2012, TM4 unveiled its next-generation MΦTIVE™ system.
- Just in the past two years, over 25 automakers in 15 countries have ordered MΦTIVE systems.
- As a move toward the electric bus of the future announced in the *Québec Research and Innovation Strategy 2010–2013*, TM4 developed the SUMΦ powertrain for heavy vehicles and delivered the first prototypes in 2012.
- TM4 and Prestolite Electric Beijing, the leading manufacturer of heavy-vehicle alternators and starters for the Chinese market, entered into an agreement creating a joint venture company, Prestolite E-Propulsion Systems (PEPS). Using TM4 technology under licence, PEPS may develop, manufacture and market electric motor systems for trucks, buses and heavy machinery destined for Asian markets.
- Under a partnering agreement with Bombardier Recreational Products (BRP), TM4 will develop an electric drive system for their light recreational vehicles, including the Can-Am Spyder hybrid roadster. Other types of light vehicles may eventually be equipped with the system.

## INNOVATION SERVING GROUND TRANSPORTATION

*Battery material research, design and development and the commercialization of related patents are an important part of the work of Hydro-Québec's research institute, IREQ. Ongoing work includes that on the physical components (powders and solvents) of batteries for land transportation and other applications. Commercial initiatives and technological breakthroughs in 2012 include those below.*

- Hydro-Québec and its partners granted two sublicences for the use of lithium metal phosphate (LMP): one to Germany's BASF, the world's top chemical company, and the other to Belgium-based Prayon, world leader in phosphate chemistry. A licence was also granted to Bathium Canada, the Boucherville subsidiary of France's Bolloré Group, for the use of LMP in the manufacture of lithium-metal-polymer batteries.
- Hydro-Québec signed a two-part agreement with Focus Graphite (formerly Focus Metals). Part one covers licensed use of a graphite purification process developed by IREQ. Part two covers licensed manufacturing of graphite anodes for lithium-ion batteries.
- Hydro-Québec granted licences to the Japanese company Nippon Soda and the U.S. firm Novolyte Technologies for the manufacture and sale of ionic liquids as battery electrolytes.
- IREQ pursued development work on anodes composed of natural graphite or titanate. These anodes are expected to offer greater energy and power, reduced charging time and increased battery life.
- IREQ continued its collaboration in developing a high-energy-density technology with the Lawrence Berkeley National Laboratory (U.S.A.) under BATT (Batteries for Advanced Transportation Technologies), a U.S. Department of Energy program.
- IREQ launched a test program on vehicle-to-grid (V2G) and vehicle-to-home (V2H) systems that implement a number of advanced Québec technologies, a key factor for Hydro-Québec. Other than TM4, partners in the project include B3CG Interconnect (Saint-Eustache), the Centre National du Transport Avancé (Saint-Jérôme) and Brioconcept (Laval).

# ACCLAIMED SUSTAINABILITY EFFORTS

Gil Halle, Supervisor, and Stéphane Lapointe, Advisor – Environment, survey a transmission line right-of-way to plan the implementation of compensation measures.

Over the years, Hydro-Québec has incorporated sustainability into all aspects of its mission and culture: operations, infrastructure projects, administration, corporate sponsorship, etc. The result is that, today, we are known for our environmental, social and economic performance. Our commitment to sustainable development is particularly evident on our jobsites, where protecting ecosystems and consulting with host communities are primary considerations. It is also reflected in our ongoing initiatives with our employees, within Québec society and in the scientific and technological circles in which we are active.

## THE ENVIRONMENT: A TOP PRIORITY

*At Hydro-Québec, we do our utmost to protect the environment in all our activities. Our major infrastructure projects all include an extremely important environmental component which entails assessing their impacts in collaboration with the parties concerned, then taking steps to prevent, mitigate or offset those impacts. The approach covers all possible aspects: impact assessment and changes to the project based on the results, permitting process, environmental compliance monitoring during construction, measures to protect the air, water, soil and biodiversity, site restoration, harmonious integration of the facilities into their environment and follow-up of mitigation measures. Other activities—such as recycling, sustainable consumption and vehicle fleet management with a view to energy efficiency—are undertaken throughout the company, while a third aspect of our commitment concerns the communities where we are present.*

- Hydro-Québec was ranked among the 2012 Best 50 Corporate Citizens in Canada, on the basis of environmental, social and governance criteria, by *Corporate Knights Magazine*. Corporate Knights is a company that promotes a responsible business approach based on the principles of sustainable development.
- For the Romaine project, we completed a number of steps toward establishing the baseline conditions and implementing the mitigation, enhancement and compensation measures defined for the project. Briefly:

  - We conducted a count of Atlantic salmon redds (nests) in the Romaine, Puyjalon and Bat-le-Diable rivers, and drew up plans and specifications for the development of spawning grounds and nurseries for this species.
  - A second inventory was made of forest-dwelling woodland caribou and telemetric monitoring of 25 females continued, in cooperation with Québec's Ministère des Ressources naturelles.
  - We assessed the potential for developing wetlands in some existing borrow pits.
  - We surveyed Innu workers with a view to finding out how they experience life at the jobsite, evaluating the effectiveness of measures designed to promote their integration, and determining the impact of their participation in the project.

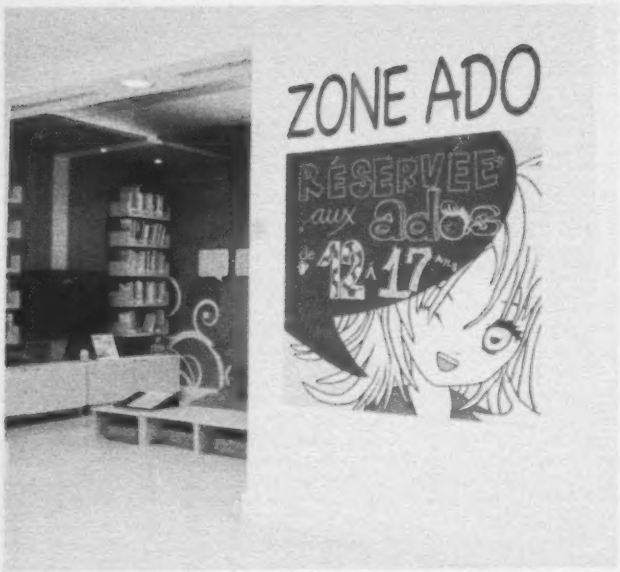
- In 2008, we installed 59 duck nest boxes around Péribonka reservoir, in Saguenay–Lac-Saint-Jean. According to our annual follow-ups, the average nest box occupation rate is 30%, and 300 ducklings have been born there in the last four years. This measure has proven especially beneficial to the common goldeneye and the common merganser.
- In Laval, property owners must remove all traces of ragweed by August 1 of each year. In view of the large number of facilities Hydro-Québec operates in this area, we have adopted a particularly environment-friendly method of complying with this by-law: rather than mowing our properties four times a year, as we used to, we do it just once, a practice that promotes the growth of competing plant species that inhibit and eliminate ragweed. This method makes use of biodiversity to prevent the spread of a plant that is harmful to health. Other benefits: greenhouse gas emissions produced by mowing are now only a quarter of their previous level, and annual maintenance costs are $17,000 lower.

- Île-de-la-Couvée and three neighboring islands near Montréal are classified as Important Bird Areas (IBA). To avoid disturbing the birds, Hydro-Québec, which has towers on three of the four islands, applies specific rules for maintenance personnel movements, equipment storage, use of motorized machinery and vegetation control under power lines.
- In connection with International In Town, Without My Car day, Hydro-Québec received Vélo Québec's Bicycle Friendly Organization Award in the 1,000 Employees and More category (joint winner with CAE). It earned this distinction for actively encouraging employees to take part in Operation Bike-to-Work.
- Parc Hydro-Québec, next door to the Centre for Sustainable Development in Montréal, was inaugurated in early summer. This 1,300-m² park, built with the collaboration of Équiterre, contains 680 m² of native and hardy plants, as well as around 30 honey locusts, which will provide an oasis of cool shade right in the heart of the Quartier des spectacles once they are full-grown. A layer of crushed porcelain from insulators recovered from our power system was spread out under a series of grids in the walkway, allowing rainwater to drain into the ground.
- The Hydro-Québec pavilion of the Centre québécois de formation en maintenance d'éoliennes was officially opened at Cégep de la Gaspésie et des Îles. In addition to being used by the college, the pavilion will offer customized training and professional development for employees of wind turbine operators or maintenance companies. Hydro-Québec donated three wind turbines to this project in 2010. In 2012, we contributed $150,000 to the Cornélius Brotherton Foundation, which supports the college's educational mission.
- In April, Polytechnique Montréal and the Université du Québec à Montréal's École des sciences de la gestion launched the International Life Cycle Chair, a research unit at the Interuniversity Research Centre for the Life Cycle of Products, Processes and Services. Hydro-Québec is funding this initiative with 13 other Canadian and foreign partners.
- In 2012, we replaced 127 of our light-duty vehicles—35% of those replaced during the year—with more energy-efficient models.
- We systematically decontaminate and recycle insulating oil used in our equipment. In 2012, our rate of reuse was 80%.

1 As part of our program to maintain beaver populations along the Route de la Romaine, we relocated a number of animals to an adjacent watershed, away from the jobsite areas, in 2012.

2 As part of the Nutrikuna project, in which the Innus and Hydro-Québec are working side by side, Priscilla Mestokosho gathers medicinal plants in the Romaine-1 sector.

3 Schoolchildren touring Première-Chute generating station (Ahtahk-Tenecamingue).

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## COMMITTED TO THE COMMUNITY

*Hydro-Québec supports many initiatives that are in the public's general interest: preservation or enhancement of the natural environment, development of community facilities, culture, etc.*

■ In 2012, the Fondation Hydro-Québec pour l'environnement allocated $757,000 to 17 projects in 12 of the province's administrative regions. Examples include development of 6 km of interpretation trails around Lac Saint-François-Xavier, an ecologically valuable natural heritage area (municipality of Wentworth-Nord in the Laurentides region); enhancement of ecosystems in Parc régional des Grandes-Coulées, home to an old-growth forest (Groupe de concertation des bassins versants de la zone Bécancour); and restoration and enhancement of protected natural environments at Mont Saint-Hilaire, a biosphere reserve (Mount Saint-Hilaire Nature Centre).

■ Under our Integrated Enhancement Program (IEP), the Town of Saint-Lazare received $297,000 following the construction of Vaudreuil-Soulanges substation. After consulting with residents, the Town decided to use the money to add 2.5 km to its bicycle network. Under the terms of the IEP, Hydro-Québec grants funding equivalent to 1% of the initially authorized value of a line or substation project to the host community.

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■ We granted $17.7 million in donations and sponsorships to support organizations and projects throughout the province. For more information, see our Web site at **www.hydroquebec.com/dons-commandites**.

1 With funds raised by Hydro-Québec's Go with the Flow campaign, the Mile End library in Montreal set up a special area for teens—the Zone Ado.

2 Since last October, Innu workers on the Romaine-2 jobsite have had a gathering place for meeting and sharing, called a *shaputuan*.

3 In 2012, a second inventory of forest-dwelling woodland caribou was made and telemetric monitoring of 25 females went into its second year.

4 The duck nest boxes installed around Péribonka reservoir show an average occupation rate of 30%. Since 2008, 209 ducklings have been born in these boxes, which have been especially beneficial to the common goldeneye (shown here) and the common merganser.

5 A young participant in the Hydro-Québec Science Fair presents her project at the regional finals in Montreal.

6 Divers count salmon redds in the Puyjalon, a tributary of the Romaine.

5

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## SUSTAINABLE DEVELOPMENT ACTION PLAN 2009–2013

The *Sustainable Development Action Plan 2009–2013* lays out a series of actions to protect the environment and promote social and economic development. These actions are in line with the company's business objectives, which revolve around renewable energies, energy efficiency and technological innovation. A formal accounting of Hydro-Québec's performance with respect to the Action Plan is presented in the *Sustainability Report 2012*.

| | Action | Indicator | Results as at December 31, 2012 |
|---|---|---|---|
| 1 | Build hydropower projects and contribute to the development of wind power. | Capacity and energy available | 906 MW[a] |
| 2 | Increase the capacity of existing hydroelectric generating stations. | Gains in peak capacity | 58 MW[a,b] |
| 3 | Step up energy efficiency initiatives. | Recurring energy savings | 7.6 TWh[c] |
| 4 | Continue to help low-income customers. | Number of arrangements with low-income customers[d] | 57,567 |
| 5 | Reduce transport-related GHG emissions. | Atmospheric emissions from the vehicle fleet | 53,049 t $CO_2$ eq. |
| 6 | Promote reduction at source, reuse and recycling. | Number of at-source reduction or reclamation programs introduced or optimized | 14[a] |
| 7 | Establish specifications for sustainable procurement. | Number of product purchasing guides that include sustainable specifications | 6[a] |
| 8 | Inform and educate employees regarding sustainability and the company's approach. Help employees learn to apply sustainability principles to their daily activities. | Percentage of employees educated | 89% |
| | | Percentage of employees who have sufficient knowledge about sustainability | 63%[a] |
| 9 | Improve vegetation control methods on the distribution system to better protect biodiversity. | Percentage of vegetation control operations per year with integrated measures for promoting biodiversity | 97% |
| 10 | Organize sustainable events and promote responsible management of events sponsored by Hydro-Québec. | Average number of contributing measures implemented among the 25 measures selected for the sustainable management of events | 15.4/25 |

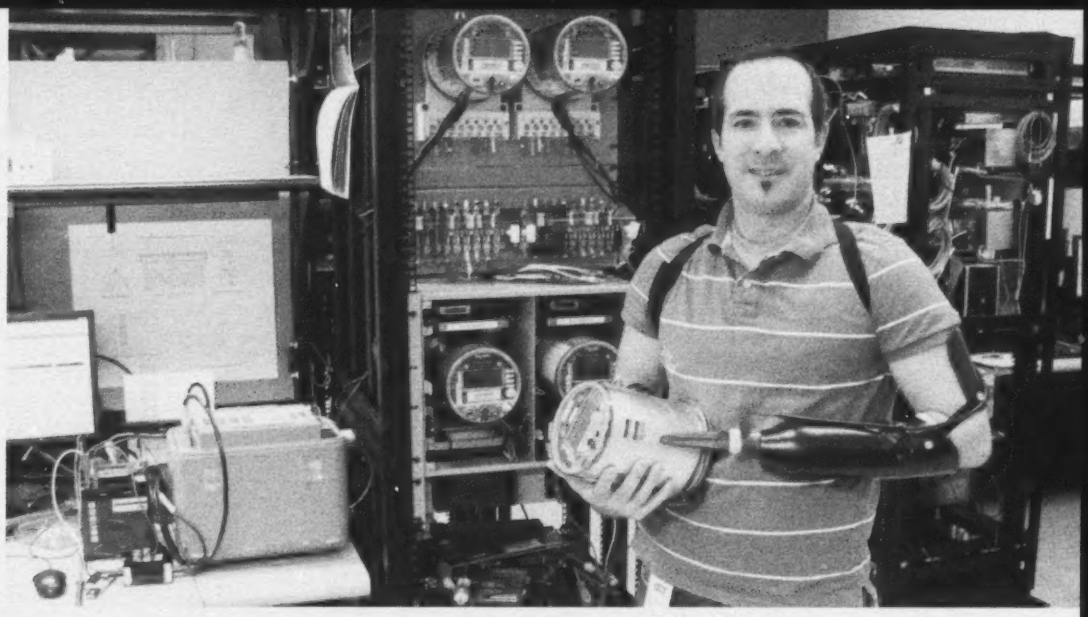
a) Cumulative results since implementation of the *Sustainable Development Action Plan 2009–2013*.

b) Action completed in 2011.

c) Savings achieved since implementation of the Energy Efficiency Plan in 2003.

d) Including long-term arrangements.

# A RESPONSIBLE ECONOMIC ACTOR



Guillaume La Rose, expert technician at Hydro-Québec Distribution, has invented a non-conductive prosthesis that allows him to work near live equipment. This innovation earned him a spot among the finalists at the 2012 Grand Rendez-vous CSST, an annual occupational health and safety event held by the Commission de la santé et de la sécurité du travail.

Hydro-Québec plays a leading role in the Québec economy. First of all, we have about 21,600 employees at 150 different locations all over the province. In addition, we make large-scale investments in developing and modernizing the power system as well as our telecommunications network, our IT equipment and our real estate holdings, and in maintaining their long-term operability—$3.9 billion in 2012 alone. Finally, we support the growth of wind power and involve numerous private- and public-sector stakeholders in our innovation initiatives.

Recognized worldwide for its expertise in large power systems, Hydro-Québec promotes Québec expertise in several national and international energy organizations. We also participate in many international cooperation and development initiatives.

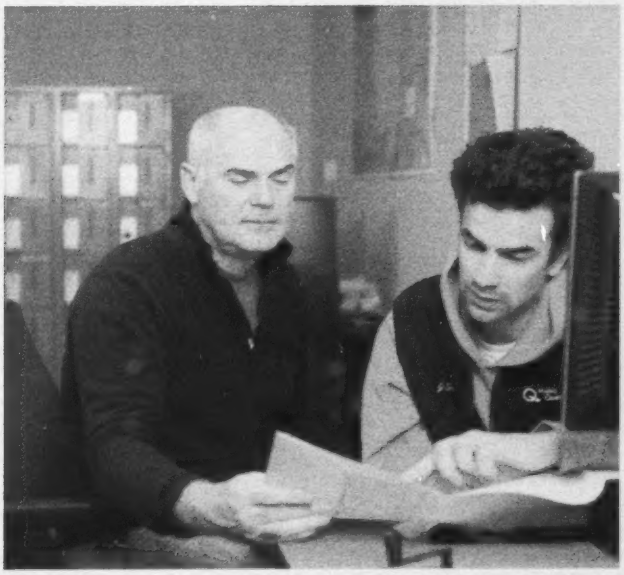
## AN EVOLVING HUMAN RESOURCES FUNCTION

*Human resources are the greatest asset of a public utility such as Hydro-Québec. It is therefore essential to maintain a safe, attractive work environment, especially in view of the continuing wave of retirements. To meet this major challenge, we have adopted a framework that encompasses our objectives in four main areas: labor force, work environment, leadership and organization. Strategies, initiatives and projects that pertain to human resources must all be in keeping with the objectives of this framework.*

### LABOR FORCE

We have deployed various strategies and measures to ensure that Hydro-Québec has the personnel it needs to achieve its business objectives.

- Of the 2,918 employees eligible for retirement in 2012, 1,140 left the company, compared with 1,201 out of 3,127 in 2011. Altogether, 5,466 employees have retired in the last five years. This trend should stabilize at about 1,000 retirements per year until 2014. We have taken steps to preserve and renew the know-how deemed essential for management positions and key jobs in our core businesses.
- In 2012, we devoted 3.4% of total payroll to training programs, and 14,678 employees took part in at least one training activity. We stepped up our initiatives in this area in response to the rationalization of the workforce and to meet the divisions' strategic needs. However, training costs still declined as a result of efficiency gains.
- We are maintaining our efforts to bring the composition of our workforce in line with the Québec labor force. In 2012, we hired 274 new employees belonging to one or more of the five groups targeted by the *Act respecting equal access to employment in public bodies*. Among other measures, various initiatives were taken to promote the hiring of people with disabilities: posting of job offers on the Web site of the Comité d'adaptation de la main-d'œuvre pour personnes handicapées; financial support for entrepreneurship grants and participation by a dozen or so managers in the grant awarding ceremony during the Semaine québécoise des personnes handicapées; improvement of staffing procedures and training of staffing advisors.
- Hydro-Québec is a founding partner of the Institute of Electrical Power Engineering (IEPE). In 2012, we awarded 15 Jean-Jacques-Archambault general scholarships and 38 traveling scholarships to IEPE students, for a total contribution of $76,000. In all, 170 IEPE graduates—including 8 in 2012—have joined the company's ranks since the Institute was established in 2001.



1 Bertrand Thibault, Line Crew Chief, Direction – Réseau de distribution – Laurentides et Montréal, with apprentice lineworker Jean-Sébastien Duhuc.

2 Patricia Johnston and Gabriel Durocher, environment advisors for Atlantic salmon, at Hydro-Québec Équipement et services partagés.

■ We offered 286 internships to 249 university students in graduate and undergraduate programs. We also took in 39 college-level trainees, most of them enrolled in industrial electronics. Over the past five years, the company has provided 1,724 internships altogether.

■ At December 31, 2012, Hydro-Québec had 905 fewer employees than one year earlier. The workforce should total 20,500 by the end of 2013.

## WORK ENVIRONMENT

Hydro-Québec has implemented different initiatives to ensure the quality of the work environment, based on a series of diagnostics:

■ In 2012, we drafted an action plan for renewing the eight collective agreements that govern working conditions for Hydro-Québec employees, 84% of whom are unionized. These agreements will expire in either December 2013 or December 2014.

■ According to a recent survey completed by 64% of employees, the overall employee commitment index was 69% in 2012. We have produced a video on ways managers can foster employee commitment.

■ In another survey, new hires rated their satisfaction with employee induction and integration procedures at 8.3 out of 10, which is similar to the 2011 result. Of the 866 new hires in 2012, 68% were under the age of 35.

■ Employee health and safety are a top priority for Hydro-Québec. Here is an overview of the measures applied in this regard in 2012:

□ We bolstered our proactive approach: we work closely with all stakeholders concerned with health and safety, both outside the company (Commission de la santé et de la sécurité du travail, Conseil du patronat du Québec, etc.) and inside (divisions, managers, unions, legal services, etc.), to clearly define the legal, economic and operational issues, help shape legislative changes and ensure compliance with laws, regulations and good practices in this area.

□ We set a company-wide target for implementation of the occupational health and safety management system in all our corporate units.

□ Employees were made aware of health and safety practices to be adopted: adherence to the rules, prevention, accountability, etc.;

□ We introduced a multidisciplinary approach (human resources, health, labor relations) to the complex issues encountered in the workplace.

■ In 2012, the frequency of work-related accidents was 2.38 per 200,000 hours worked.

## LEADERSHIP

We kept up our efforts to prepare the next generation of managers and bolster leadership. For example, we revised our individual performance and succession management procedures and continued our leadership development programs. A review of performance appraisals carried out in 2012 reveals our managers' outstanding ability to produce results.

■ We wound up our inventory of critical positions at all management levels. We also continued our activities related to succession planning for senior managers and embarked on the same process for middle managers, using the same parameters and tools throughout the company.

■ In 2012, 110 supervisory managers completed their training under their specific professional development programs, while another 183 will continue their training in 2013. Additionally, 28 middle managers received training under a new program specially designed for them.

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ORGANIZATION

We launched several initiatives to continue improving efficiency. For example, a number of structures were reorganized and work processes were adjusted. We made use of managers' leadership skills and called upon employees' adaptability to enable the company to face major changes such as the shutdown of Gentilly-2 nuclear generating station.

Work organization, support structures and the definition of responsibilities play a key role in the strong performance of the company and its employees. To stabilize operations quickly, limit the impacts of change and ensure that employees have the tools and conditions they need to do their jobs, Hydro-Québec's organization must evolve as smoothly as possible.

That was the thrust of the reorganization of the human resources function in 2012. Among other things, optimizing procedures yielded sizable efficiency gains while ensuring uniform, more equitable handling of HR issues within the company.

## A DRIVING FORCE FOR REGIONAL DEVELOPMENT

*Hydro-Québec is a major player in the Québec economy. Through its activities—operation of generating stations, lines and substations, construction and refurbishment of facilities, purchases from independent power producers, procurement of goods and services—the company contributes to the vitality of all the province's regions, even the most remote. Every year, its spending and investments add up to billions of dollars and generate thousands of jobs, and 2012 was no exception.*

- The $6.5-billion project to build the Romaine complex represented investments of $650 million (financing excluded) in 2012. Employment totaled 1,348 person-years, with Côte-Nord and Innu workers accounting for 40% of the labor force. Contracts awarded in the region amounted to $74 million. Between 2013 and 2016, the peak labor force will be in excess of 2,000 workers, most of them from the region.

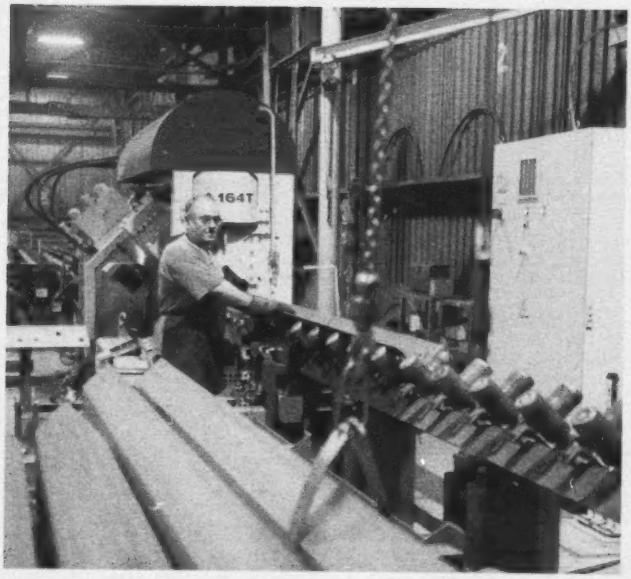
### HYDRO-QUÉBEC'S CONTRIBUTION TO THE QUÉBEC ECONOMY

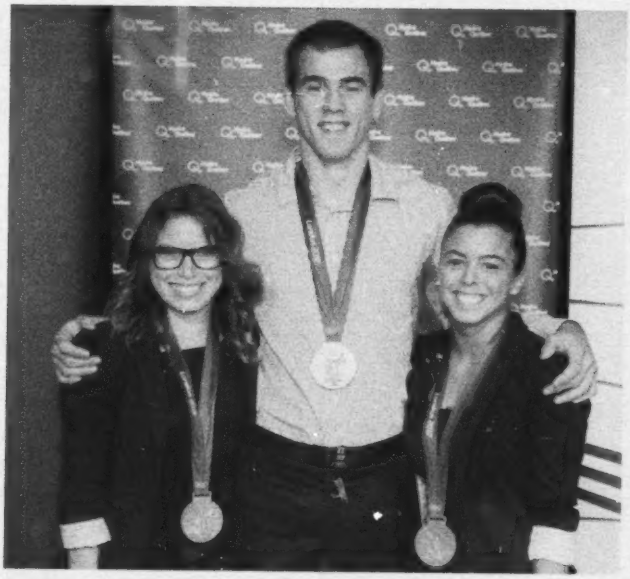
| | 2012 | 2011 |
|---|---|---|
| Dividend ($M)[a] | **645** | 1,958 |
| Public utilities tax ($M) | **252** | 244 |
| Water-power royalties ($M) | **617** | 593 |
| Municipal, school and other taxes ($M) | **124**[b] | 22 |
| Guarantee fees paid to the shareholder for debt securities ($M) | **197** | 188 |
| Percentage of the value of goods and services procured from Québec-based companies | **94** | 92.5 |
| Direct jobs supported by procurement, including procurement outside Québec (person-years) | **12,900** | 12,800 |
| Contributions and commitments under the Integrated Enhancement Program ($M)[c] | **2.5** | 2.3 |

a) Under the *Hydro-Québec Act*, the dividend cannot exceed the distributable surplus, which corresponds to 75% of net result.

b) Including $33 million in municipal taxes, $3 million in school taxes, $49 million under the *Act to establish the Northern Plan Fund* and $37 million under the *Act respecting Energy Efficiency and Innovation*.

c) Under the company's Integrated Enhancement Program, communities affected by new transmission projects receive grants equivalent to 1% of the value initially approved for facilities covered by this program.





- Procurement of goods and services inside and outside Québec totaled $3,011 million[1] in 2012, compared with $2,913 million[1] in 2011:
  - $1,088 million for the purchase of goods
  - $26 million for rentals and leasing
  - $1,471 million for specialized services and other work
  - $426 million for professional services
- Goods and services procured from Québec-based companies totaled $2,834 million, or 94% of all procurement.
- The number of jobs in Québec supported by our overall procurement of goods and services is estimated at 19,400, including 12,900 direct jobs.
- We introduced a code of conduct for our suppliers and their subcontractors. Ethics and integrity are the cornerstones of this code, which also covers issues such as equity, confidentiality, environmental protection and respect for individuals.
- In 2012, our hydroelectric projects sustained 2,900 construction jobs,[2] not including Hydro-Québec employees.

### PROCUREMENT OF GOODS AND SERVICES ($B)

| 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|
| **3.0** | 2.9 | 3.0 | 2.9 | 2.7 |

## INTERNATIONAL INFLUENCE

*Hydro-Québec participates in the activities of a number of national and international organizations involved in the power industry. By doing so, we are able to remain on the leading edge of technologies and issues related to our business, while offering a prime showcase for Québec know-how. We also share our expertise with developing countries under various cooperation projects. Among the year's highlights:*

- In September, Hydro-Québec hosted the 7th Annual Conference of CIGRE Canada (International Council on Large Electric Systems), held in Montréal on the theme *Technology and Innovation for the Evolving Power Grid*. Some 130 technical and scientific papers were presented to 450 participants from 22 countries.
- In November, Marie-José Nadeau was elected Chair of the World Energy Council (WEC) for a three-year term, starting in October 2013. Considered the world's premier energy forum, WEC promotes the sustainable development of all forms of energy.
- Hydro-Québec continued to play an active role in the International Hydropower Association (IHA), particularly on issues being explored by the Communications Working Group and the new Hydropower Development Strategy Committee. The IHA is a major non-governmental

1 Daniel Beaulieu, mechanical support technician, Martin Blais, maintenance manager, Donald Arseneault, chief powerhouse mechanic, Yan Bernatchez, powerhouse mechanic, and Gino St-Laurent, safety advisor, garnered an occupational health and safety Grand Prix from the Côte-Nord branch of the Commission de la santé et de la sécurité du travail, in the Innovation – Public Organizations category, for an anchoring system that protects workers if they fall into a turbine draft tube.

2 Nicole Gahamanyi and Catherine Brousseau, engineers at Hydro-Québec TransÉnergie, led workshops at the event "Les filles et les sciences, un duo électrisant!" to introduce girls in secondary one and two to science and technology occupations.

3 A Drummondville company makes components for the 735-kV towers that will carry the Romaine-2–Arnaud line.

4 Several winners of Hydro-Québec scholarships awarded by the Fondation de l'athlète d'excellence du Québec distinguished themselves at the London Olympics. Standing beside Antoine Valois-Fortier, bronze medalist in judo, are Roseline Filion (left) and Meghan Benfeito, bronze medalists in synchronized diving.

1. Excluding procurement by Société d'énergie de la Baie James.
2. Including projects carried out by Société d'énergie de la Baie James.

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1 Electrician Raphael Plouffe uses a multimeter to check for the absence of voltage in a 347/600-kV distribution panel before starting work.

2 Spokesman Louis-Olivier Batty giving an interview in front of an information panel marking the 50th anniversary of Hydro-Québec's head office in Montréal.

organization whose mission is to promote hydropower as a renewable and sustainable energy source. Hydro-Québec has been a member of its Board of Directors since the IHA was founded in 1995.

- As part of the support we provide to the French-speaking world, we are involved in various cooperation projects. The latest example is a mini hydro project in the Labrousse region in Haiti. The company's contribution takes several forms: financial assistance, hydroelectric development expertise, supply of material and equipment, and participation in setting up an electricity cooperative.
- Hydro-Québec specialists gave training sessions in French-speaking Africa on ways of financing sustainable rural electrification and on environmental impact assessment methods.
- Under the Global Sustainable Electricity Partnership (formerly the e8), Hydro-Québec is collaborating on a renewable energy development project in Patagonia.

**REGIONAL SPINOFFS FROM HYDRO-QUÉBEC PROCUREMENT ($'000)[a]**

| Administrative region | Procurement of services[b] | Procurement of goods[c] | **Total** |
|---|---|---|---|
| Abitibi-Témiscamingue (08) | 15,562 | 10,402 | **25,964** |
| Bas-Saint-Laurent (01) | 8,773 | 4,895 | **13,668** |
| Capitale-Nationale (03)[d] | 262,986 | 43,317 | **306,303** |
| Centre-du-Québec (17)[d] | 98,190 | 37,798 | **135,988** |
| Chaudière-Appalaches (12)[d] | 84,132 | 29,302 | **113,434** |
| Côte-Nord (09) | 146,880 | 7,645 | **154,525** |
| Estrie (05)[d] | 11,411 | 16,341 | **27,752** |
| Gaspésie–Îles-de-la-Madeleine (11)[d] | 5,884 | 1,195 | **7,079** |
| Lanaudière (14) | 33,849 | 33,489 | **67,338** |
| Laurentides (15) | 110,494 | 15,601 | **126,095** |
| Laval (13) | 260,812 | 39,042 | **299,854** |
| Mauricie (04) | 128,081 | 34,322 | **162,403** |
| Montérégie (16)[d] | 164,870 | 201,550 | **366,420** |
| Montréal (06) | 406,421 | 443,334 | **849,755** |
| Nord-du-Québec (10) | 11,071 | 1,383 | **12,454** |
| Outaouais (07) | 3,279 | 15,223 | **18,502** |
| Saguenay–Lac-Saint-Jean (02)[d] | 124,980 | 21,473 | **146,453** |
| Total | 1,877,675 | 956,312 | **2,833,987** |

a) Amounts billed by suppliers located in the region, excluding procurement by Société d'énergie de la Baie James.

b) Specialized services, professional services and other work.

c) Purchases and rentals.

d) In 2012, contracts awarded under Hydro-Québec Distribution's calls for wind power resulted in the following estimated regional spinoffs, in addition to the amounts shown in the table: Bas-Saint-Laurent, $318 million; Capitale-Nationale, $21 million; Chaudière-Appalaches, $302 million; Estrie, $82 million; Gaspésie–Îles-de-la-Madeleine region and regional county municipality of Matane, $330 million; Montérégie, $51 million; Saguenay–Lac-Saint-Jean, $3 million.

# MANAGEMENT'S DISCUSSION AND ANALYSIS

## FINANCIAL REVIEW

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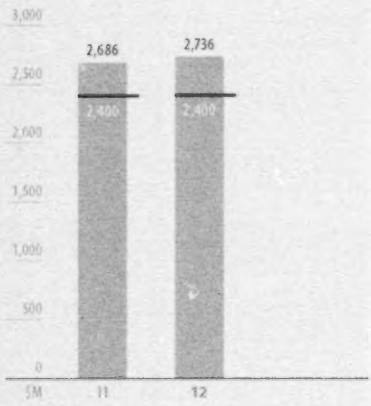
This Management's Discussion and Analysis should be read in conjunction with the consolidated financial statements of Hydro-Québec and the notes thereto. The financial information and tabular amounts presented herein are expressed in Canadian dollars, unless otherwise indicated. The consolidated financial statements reflect the decisions of the Régie de l'énergie.

This analysis, and especially the Outlook section, contains statements based on estimates and assumptions concerning future results and the course of events. Given the risks and uncertainties inherent in any forward-looking statements, Hydro-Québec's actual future results could differ materially from those anticipated. It should also be noted that certain financial and operating data for previous years have been reclassified to conform to the presentation adopted for the current year. Finally, the information contained herein takes into account any significant event that occurred on or before the date of publication of this Annual Report.

## Overview

**RESULT FROM CONTINUING OPERATIONS**




The **result from continuing operations** totaled $2,736 million, a $50-million increase over 2011. It exceeded the *Strategic Plan 2009–2013* target despite a fairly difficult business environment.

This favorable result was due in part to an increase in net electricity exports by Hydro-Québec Production and a decrease in operating expenses. Thanks to the strong performance of our generating facilities and transmission system, we were able to step up our export volume and thus offset lower prices on energy markets. On the Québec market, revenue from electricity sales decreased, mainly because of lower demand in the industrial sector and the negative impact of special contracts with certain large industrial customers. However, efficiency gains achieved within the company made it possible to reduce operating expenses while fully absorbing the impact of inflation and salary indexing as well as the additional expenses resulting from growth in operating assets.

As mentioned above, the result from continuing operations increased by $50 million. On one hand, net electricity exports rose to $1,233 million, a $99-million increase over the $1,134 million recorded in 2011. On the other hand, revenue from electricity sales in Québec decreased due to a $109-million reduction in demand from industrial customers, partly offset by a $72-million increase in residential demand. The net result from special contracts with certain large industrial customers decreased by $145 million because of aluminum prices and the exchange rate. Moreover, Hydro-Québec had to make electricity purchases of $148 million from Rio Tinto Alcan, notably because of a labor conflict at one of that company's large aluminum smelters in 2012. It also recorded amounts payable to the Québec government, namely $49 million under the *Act to establish the Northern Plan Fund* and $37 million under the *Act respecting Energy Efficiency and Innovation*. These unfavorable items were partly offset by a $54-million decrease in operating expenses and by a $275-million reduction in depreciation and amortization expense and financial expenses.

In 2012, following the decision to abandon the project to refurbish Gentilly-2 nuclear generating station, Hydro-Québec posted a $1.9-billion negative **result from discontinued operations** that is mainly due to the accounting treatment of the facility's definitive shutdown at the end of 2012. More specifically, the abandonment of the refurbishment project and the facility's shutdown led to a write-off of $990 million in property, plant and equipment under construction and the recognition of an impairment charge of $827 million related to nuclear generation assets, for a total of $1,817 million, as well as to a negative operating result of $59 million. It should be noted that this accounting treatment had no impact on the cash flows from operating activities for the year.

When the discontinued operations are factored in, the **net result** totaled $860 million in 2012, compared to $2,611 million in 2011.

**Revenue** totaled $12,228 million, comparable to the $12,245 million posted in 2011. Revenue from electricity sales amounted to $11,736 million, compared to $11,972 million in 2011: it decreased by $278 million in Québec and increased by $42 million on markets outside Québec. Other revenue totaled $492 million, compared to $273 million in 2011.

**Total expenditure** was $7,051 million, comparable to the $7,031 million recorded in 2011. The decreases of $54 million and $188 million in operating expenses and depreciation and amortization expense, respectively, were counterbalanced by several items, including a $129-million increase in electricity and fuel purchases, mainly due to the $148 million in electricity purchases from Rio Tinto Alcan and an $85-million increase in electricity purchases made by Hydro-Québec Distribution, which were partly offset by a $58-million reduction in short-term electricity purchases by Hydro-Québec Production. Taxes rose by $133 million, partly as a result of a $23-million increase in water-power royalties on account of higher output and the indexing of the applicable rate. Hydro-Québec also recorded amounts payable to the Québec government, namely $49 million under the *Act to establish the Northern Plan Fund* and $37 million under the *Act respecting Energy Efficiency and Innovation*.

**Financial expenses** totaled $2,441 million, an $87-million decrease compared to the $2,528 million recorded in 2011. This decrease is mainly due to interest rates on capital markets, which had a positive impact on long-term debt refinancing.

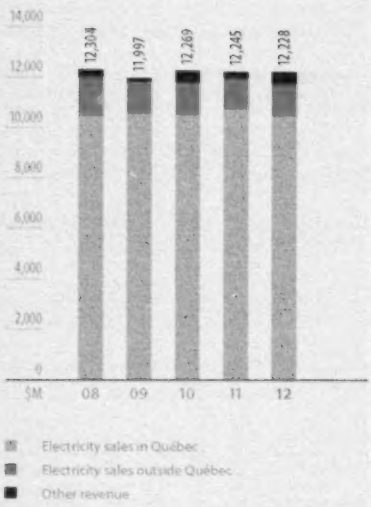
**Return on equity from continuing operations** was 14.6% in 2012, reflecting Hydro-Québec's good financial performance.

**Cash flows from operating activities** totaled $4.8 billion. They allowed the company, among other things, to pay the 2011 dividend of $1,958 million and to finance a large portion of its investment program, which reached $3.9 billion in 2012, compared to $3.8 billion in 2011. It should be noted that the accounting treatment of the definitive shutdown of Gentilly-2 nuclear generating station at the end of 2012 had no impact on the cash flows from operating activities for the year.

The **dividend** for 2012 amounts to $645 million.

## Consolidated Results

**REVENUE**




The result from continuing operations totaled $2,736 million in 2012, a $50-million increase over 2011.

Revenue totaled $12,228 million, compared to $12,245 million in 2011. Revenue from electricity sales decreased by $236 million to $11,736 million. Sales in Québec accounted for $10,442 million of this amount, or $278 million less than in 2011. On markets outside Québec, revenue from electricity sales totaled $1,294 million, an increase of $42 million. Other revenue amounted to $492 million, compared to $273 million in 2011.

The $278-million decrease in revenue from electricity sales in Québec resulted mainly from the mild temperatures in 2012, which led to a 1.7-TWh or $120-million drop in volume. It was also due to a 2.1-TWh reduction in demand in the industrial sector, which was partly offset by a 1.0-TWh increase in demand from residential customers. Revenue from special contracts with certain large industrial customers decreased by $136 million because of aluminum prices and the exchange rate.

The $42-million increase in revenue from electricity sales on markets outside Québec resulted from growth in Hydro-Québec Production's export revenue. An 8.5-TWh increase in sales volume made it possible to counterbalance the lower energy prices on North American markets.

Other revenue totaled $492 million, a $219-million increase over 2011 that is mainly due to differences in the net amounts receivable from customers or payable to them in the future in connection with revenue variances related to climate conditions, given the mild temperatures in 2012, as well as variances in the annual cost of native-load transmission service and in revenue from point-to-point transmission services, among other things. The differences in the net amounts led to the recognition of $126 million receivable from customers in 2012, compared to $51 million payable to customers in 2011.

Total expenditure was $7,051 million, comparable to the $7,031 million recorded in 2011.

Operating expenses amounted to $2,356 million in 2012, a $54-million decrease from 2011. The efficiency gains achieved within the company made it possible to reduce these expenses while also fully absorbing the impact of inflation and salary indexing as well as the additional expenses resulting from growth in operating assets.

Electricity and fuel purchases totaled $1,283 million, compared to $1,154 million in 2011. This $129-million increase is mainly due to electricity purchases of $148 million from Rio Tinto Alcan, notably because of a labor conflict at one of that company's large aluminum smelters in 2012, as well as to an $85-million increase in electricity purchases made by Hydro-Québec Distribution. These items were partly offset by a $58-million reduction in short-term electricity purchases related to Hydro-Québec Production's trading activities.

Depreciation and amortization expense amounted to $2,415 million, a decrease of $188 million from 2011 that is due to a $232-million reduction in the depreciation of property, plant and equipment, mainly owing to the impact of the definitive shutdown of Tracy thermal generating station in 2011 and the revision, in 2012, of the useful life of some hydraulic generation assets as well as certain distribution and transmission line and substation assets. These items were partly offset by the impact of the commissioning of capital assets, including the three generating units at Eastmain-1-A powerhouse.

Taxes were $997 million, compared to $864 million in 2011. This $133-million increase resulted in part from a $23-million rise in water power royalties paid by Hydro-Québec Production on account of higher output and the indexing of the applicable rate. In addition, Hydro-Québec recorded amounts payable to the Québec government, namely $49 million under the *Act to establish the Northern Plan Fund* and $37 million under the *Act respecting Energy Efficiency and Innovation*.

Financial expenses totaled $2,441 million, an $87-million decrease compared to the $2,528 million recorded in 2011. This decrease is mainly due to interest rates on capital markets, which had a positive impact on long-term debt refinancing.

In 2012, the decision was made to abandon the project to refurbish Gentilly-2 nuclear generating station and terminate nuclear power operations. Hydro-Québec therefore recorded a $1.9-billion negative result from discontinued operations that is mainly due to the accounting treatment of the facility's definitive shutdown at the end of 2012. More specifically, the abandonment of the refurbishment project and the facility's shutdown led to a write-off of $990 million in property, plant and equipment under construction and the recognition of an impairment charge of $827 million related to nuclear generation assets, for a total of $1,817 million, as well as to a negative operating result of $59 million. It should be noted that this accounting treatment had no impact on the cash flows from operating activities for the year.

When the discontinued operations are factored in, the net result totaled $860 million in 2012, compared to $2,611 million in 2011.

| | 2012 | 2011 |
|---|---|---|
| **OPERATIONS AND DIVIDEND ($M)** | | |
| Revenue | **12,228** | 12,245 |
| Operating result | **5,177** | 5,214 |
| Result from continuing operations | **2,736** | 2,686 |
| Result from discontinued operations[a] | **(1,876)** | (75) |
| Net result | **860** | 2,611 |
| Dividend | **645** | 1,958 |
| **BALANCE SHEETS ($M)** | | |
| Total assets | **70,517** | 69,637 |
| Property, plant and equipment | **57,174** | 56,901 |
| Long-term debt, including current portion and perpetual debt | **43,524** | 42,050 |
| Equity | **18,982** | 18,834 |
| **FINANCIAL RATIOS** | | |
| Interest coverage | **2.03** | 2.00 |
| Return on equity from continuing operations (%) | **14.6** | 15.5 |
| Profit margin from continuing operations (%) | **22.4** | 21.9 |
| Capitalization (%) | **30.6** | 31.4 |
| Self-financing (%) | **54.5** | 49.0 |

a) The discontinued operations are related to the decision made in 2012 to abandon the project to refurbish Gentilly-2 nuclear generating station and terminate nuclear power operations.

Note: Certain comparative figures have been reclassified to conform to the presentation adopted in the current year.

## Cash and Capital Management

### OPERATING ACTIVITIES

Cash flows from operating activities totaled $4.8 billion in 2012, compared to $5.2 billion in 2011. These funds were mainly used to pay the dividend for 2011 and to finance a large portion of the investment program. It should be noted that the accounting treatment of the definitive shutdown of Gentilly-2 nuclear generating station at the end of 2012 had no impact on the cash flows from operating activities for the year.

### INVESTING ACTIVITIES

In 2012, Hydro-Québec invested $3.9 billion in property, plant and equipment and intangible assets including the Energy Efficiency Plan (EEP), compared to $3.8 billion in 2011. Of this total, $2.0 billion was invested in development projects and $1.8 billion in maintaining or improving asset quality, while $0.1 billion went to the EEP.

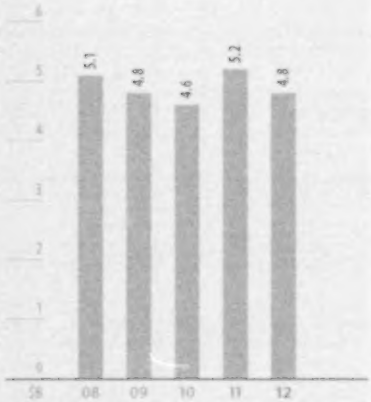
Hydro-Québec Production invested a total of $1,511 million in 2012, compared to $1,467 million in 2011. As expected, a large portion of this amount, $951 million, went to the division's development projects such as the Romaine complex and the Sarcelle powerhouse jobsite. The amounts allocated to ongoing asset maintenance and improvement totaled $560 million. For example, refurbishment continued at Robert-Bourassa and Beauharnois generating stations and the Manicouagan complex.

Capital spending at Hydro-Québec TransÉnergie totaled $1,423 million in 2012, 48% of which was used to increase transmission capacity and integrate the output from new hydroelectric and wind power facilities. These projects included the connection of seven wind farms built in response to the call for tenders issued by Hydro-Québec Distribution in 2005 (2,000 MW) and the extension of the transmission system in Minganie to connect the Romaine complex (1,550 MW). Investments of $735 million were made in asset sustainment, which mainly involved replacing equipment and modernizing facilities.

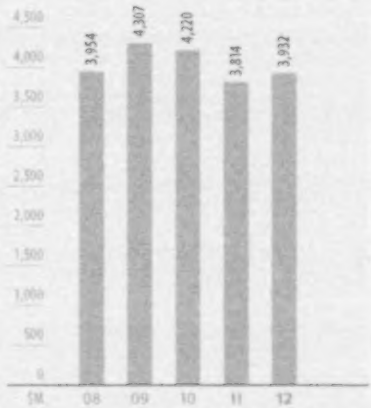
Hydro-Québec Distribution invested $730 million to handle its growing customer base, ensure the long-term operability of the distribution system and enhance service quality. An additional $144 million was allocated to the EEP.

Hydro-Québec Équipement et services partagés and Société d'énergie de la Baie James carry out engineering, construction and refurbishment projects for Hydro-Québec Production and Hydro-Québec TransÉnergie. In addition, Hydro-Québec Équipement et services partagés offers company-wide shared services that include procurement of goods and services, real estate management, document management, materials management as well as transportation, food and accommodation services.

**CASH FLOWS FROM OPERATING ACTIVITIES**

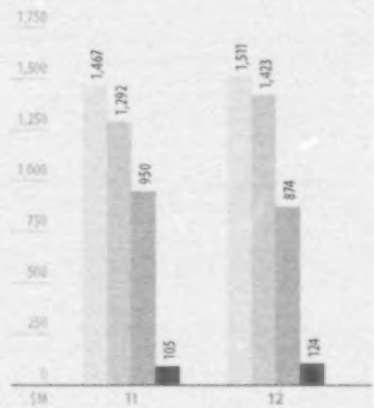



**INVESTMENTS IN PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS[a]**



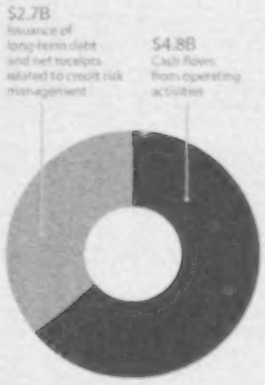

a) Including the Energy Efficiency Plan.

**INVESTMENTS IN PROPERTY, PLANT AND EQUIPMENT AND INTANGIBLE ASSETS[a] BY SEGMENT**




a) Including the Energy Efficiency Plan.

**SOURCES OF FUNDS IN 2012**


$2.7B
Issuance of long-term debt and net receipts related to credit risk management
$4.8B
Cash flows from operating activities

**USES OF FUNDS IN 2012**

a) Including the Energy Efficiency Plan.

## FINANCING ACTIVITIES

In 2012, Hydro-Québec's financing activities raised $2.3 billion on the Canadian and global markets.

In the first half of the year, the company issued US$1.0 billion of debentures on the global market, bearing interest at 1.38% and maturing in June 2017. This transaction was carried out with a yield to maturity of 1.40%.

In addition, Hydro-Québec took advantage of the low interest rate environment to float two debenture issues of $500 million each on the Canadian market, one in July and the other in December. These debentures bear interest at the rate of 5.00% and mature in 2050. These transactions were carried out with an average yield to maturity of 3.47%.

The proceeds were used to support part of the investment program and refinance maturing debt.

## SOURCES OF FINANCING

| Type of financing | Amount authorized by the Board of Directors | Market | Outstanding as at December 31, 2012 |
|---|---|---|---|
| Credit lines | C$500 million[a] or US$500 million[a] | | C$1 million |
| Credit facility[b] | US$1,640 million | | |
| Commercial paper[b] | US$3,500 million or equivalent in C$ | United States or Canada | C$19 million |
| Medium-term notes[b] | US$3,000 million or equivalent in other currencies<br>C$20,000 million or equivalent in US$ | United States<br>Canada | US$340 million[c]<br>C$14,279 million[c] |

a) Of this amount, $407 million is covered by operating credit line agreements with financial institutions.

b) Guaranteed by the Québec government.

c) Corresponds to net proceeds from the issue of medium-term notes.

## CREDIT RATINGS

| | 2012 | | | 2011 | | |
|---|---|---|---|---|---|---|
| | Commercial paper | Long-term | Outlook/ Trend | Commercial paper | Long-term | Outlook/ Trend |
| U.S. agencies | | | | | | |
| Moody's | **P-1** | **Aa2** | **Stable** | P-1 | Aa2 | Stable |
| Standard & Poor's | **A-1+** | **A+** | **N/A**[a] | A-1+ | A+ | N/A[a] |
| Fitch Ratings | **F1+** | **AA-** | **Stable** | F1+ | AA- | Stable |
| Canadian agency | | | | | | |
| DBRS | **R-1 (middle)** | **A (high)** | **Stable** | R-1 (middle) | A (high) | Stable |

a) Standard & Poor's does not provide an outlook for Hydro-Québec's credit rating. However, it has given the Québec government, Hydro-Québec's shareholder and guarantor, a "stable" outlook.

## DIVIDEND AND CAPITALIZATION RATE

The dividend for 2012 amounts to $645 million. Once this dividend is factored in, the capitalization rate was 30.6% as at December 31, 2012.

## Segmented Information

As in 2011, Hydro-Québec had four operating segments in 2012, namely Generation, Transmission, Distribution and Construction, as well as activities grouped under Corporate and Other Activities.

| | 2012 | | | | | |
|---|---|---|---|---|---|---|
| Segmented financial information ($M) | Generation | Transmission | Distribution | Construction | Corporate and Other Activities | Hydro-Québec[a] |
| Revenue | **6,141** | **3,105** | **10,731** | **2,295** | **1,450** | **12,228** |
| Result from continuing operations | **1,541** | **581** | **503** | **–** | **111** | **2,736** |
| Result from discontinued operations[b] | **(1,867)** | **(9)** | **–** | **–** | **–** | **(1,876)** |
| Net result | **(326)** | **572** | **503** | **–** | **111** | **860** |
| Total assets | **31,066** | **19,144** | **13,434** | **421** | **6,648** | **70,517** |

| | 2011 | | | | | |
|---|---|---|---|---|---|---|
| Segmented financial information ($M) | Generation | Transmission | Distribution | Construction | Corporate and Other Activities | Hydro-Québec[a] |
| Revenue | 6,349 | 3,089 | 10,751 | 2,122 | 1,459 | 12,245 |
| Result from continuing operations | 1,765 | 429 | 374 | – | 115 | 2,686 |
| Result from discontinued operations[b] | (75) | – | – | – | – | (75) |
| Net result | 1,690 | 429 | 374 | – | 115 | 2,611 |
| Total assets | 31,661 | 18,509 | 12,983 | 398 | 6,317 | 69,637 |

a) Includes the intersegment eliminations presented in Note 23 to the consolidated financial statements.

b) The discontinued operations are related to the decision made in 2012 to abandon the project to refurbish Gentilly-2 nuclear generating station and terminate nuclear power operations.

Note: Certain comparative figures have been reclassified to conform to the presentation adopted in the current year.

## SEGMENT HIGHLIGHTS

The **Generation** segment posted a result from continuing operations of $1,541 million in 2012, compared to $1,765 million in 2011. Net electricity exports totaled $1,233 million, or $99 million more than the $1,134 million recorded a year earlier. This increase is due to volume growth of 9.3 TWh, which had a positive impact of $373 million, mitigated by market conditions, which had a negative impact of $274 million. Electricity sales to Hydro-Québec Distribution decreased by $66 million compared to the $4,821 million recorded in 2011, mainly on account of the mild temperatures in 2012. The net result from special contracts with certain large industrial customers in Québec decreased by $145 million as a result of aluminum prices and the exchange rate. On the expenditure side, Hydro-Québec Production had to make electricity purchases of $148 million from Rio Tinto Alcan, notably because of a labor conflict at one of that company's large aluminum smelters in 2012. Water-power royalties increased by $23 million due to higher output and the indexing of the applicable rate. In addition, $49 million payable to the Québec government was recorded under the *Act to establish the Northern Plan Fund*. Depreciation and amortization expense decreased by $75 million.

Hydro-Québec Production also recorded a negative result from discontinued operations of $1,867 million on account of the definitive shutdown of Gentilly-2 nuclear generating station at the end of 2012.

The **Transmission** segment posted a result from continuing operations of $581 million in 2012, a $152 million increase from $429 million in 2011 due in part to variances in revenue from point-to-point transmission services. In addition, depreciation and amortization expense and financial expenses decreased by $52 million and $63 million, respectively.

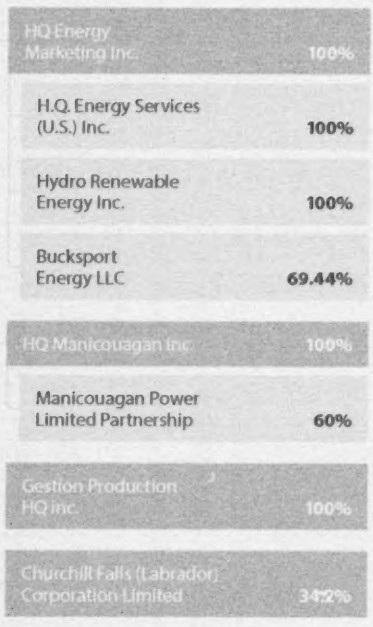
Hydro-Québec TransÉnergie also recorded a negative result from discontinued operations of $9 million on account of the definitive shutdown of Gentilly-2 nuclear generating station at the end of 2012.

The **Distribution** segment posted a result from continuing operations of $503 million in 2012 compared to $374 million in 2011, an increase of $129 million. Revenue from electricity sales decreased, mainly due to the mild temperatures in 2012 and lower demand from industrial customers, which was partly offset by higher demand from residential customers. The decrease in revenue from electricity sales was mitigated by revenue variances related to climate conditions and variances in the annual cost of native-load transmission service, among other things. On the expenditure side, transmission costs, net of the reduction in electricity purchases, increased by $29 million. In addition, $37 million payable to the Québec government was recorded under the *Act respecting Energy Efficiency and Innovation*. These negative items were more than offset by decreases of $72 million and $67 million in depreciation and amortization expense and financial expenses, respectively.

The **Construction** segment recorded a volume of activity of $2,295 million in 2012, compared to $2,122 million in 2011. As in 2011, this high volume stemmed from work on several major projects.

# Generation

## Hydro-Québec Production


HQ Energy Marketing Inc. 100%
H.Q. Energy Services (U.S.) Inc. 100%
Hydro Renewable Energy Inc. 100%
Bucksport Energy LLC 69.44%
HQ Manicouagan Inc. 100%
Manicouagan Power Limited Partnership 60%
Gestion Production HQ inc. 100%
Churchill Falls (Labrador) Corporation Limited 34.2%

Hydro-Québec division

Subsidiary, joint venture or interest held by Hydro-Québec and under the responsibility of Hydro-Québec Production

Under the *Act respecting the Régie de l'énergie*, Hydro-Québec Production is required to provide Hydro-Québec Distribution with up to 165 TWh a year of heritage pool electricity. It may also compete for contracts under Hydro-Québec Distribution's open tendering process. In addition, the division sells electricity on wholesale markets in northeastern North America.

The division operates 61 generating stations. Its capital projects serve a twofold objective: to ensure the long-term operability of existing facilities and to continue development of Québec's hydroelectric potential.

### OPERATING RESULTS

Hydro-Québec Production posted a result from continuing operations of $1,541 million in 2012, compared to $1,765 million in 2011. Net electricity exports totaled $1,233 million, or $99 million more than the $1,134 million recorded a year earlier. This increase is due to volume growth of 9.3 TWh, which had a positive impact of $373 million, mitigated by market conditions, which had a negative impact of $274 million. Electricity sales to Hydro-Québec Distribution decreased by $66 million compared to the $4,821 million recorded in 2011, mainly on account of the mild temperatures in 2012. The net result from special contracts with certain large industrial customers in Québec decreased by $145 million as a result of aluminum prices and the exchange rate. On the expenditure side, Hydro-Québec Production had to make electricity purchases of $148 million from Rio Tinto Alcan, notably because of a labor conflict at one of that company's large aluminum smelters in 2012. Water power royalties increased by $23 million due to higher output and the indexing of the applicable rate. In addition, $49 million payable to the Québec government was recorded under the *Act to establish the Northern Plan Fund*. Depreciation and amortization expense decreased by $75 million.

Hydro-Québec Production also recorded a $1,867 million negative result from discontinued operations on account of the definitive shutdown of Gentilly-2 nuclear generating station at the end of 2012.

### ELECTRICITY SALES IN QUÉBEC

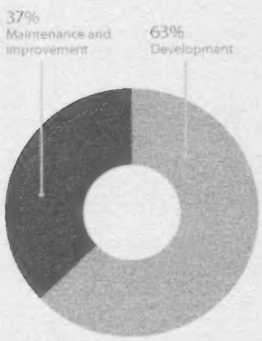
#### *SALES TO HYDRO-QUÉBEC DISTRIBUTION*

The total volume of electricity sales to Hydro-Québec Distribution was 165.7 TWh, compared to 168.6 TWh in 2011, a decrease of 2.9 TWh. Revenue generated by these sales decreased by $66 million to $4,755 million, mainly due to the mild temperatures in 2012.

#### *SPECIAL CONTRACTS BETWEEN HYDRO-QUÉBEC DISTRIBUTION AND CERTAIN LARGE INDUSTRIAL CUSTOMERS*

The risks related to Hydro-Québec Distribution's special contracts with certain large industrial customers in Québec are absorbed by Hydro-Québec Production. In 2012, the net result from special contracts was $145 million lower than in 2011 on account of aluminum prices and the exchange rate.

**BREAKDOWN OF 2012 INVESTMENTS BY HYDRO-QUÉBEC PRODUCTION**




### ELECTRICITY SALES OUTSIDE QUÉBEC

Electricity sales outside Québec amounted to $1,431 million for 35.2 TWh, compared to $1,397 million for 26.7 TWh in 2011. Short-term electricity sales generated $1,220 million for 32.5 TWh, compared to $1,143 million for 24.1 TWh in 2011.

Net electricity exports, which take short-term electricity purchases into account, generated $1,233 million for a net reservoir drawdown of 30.1 TWh, compared to $1,134 million for 20.8 TWh in 2011. The 9.3-TWh or $373-million increase in net export volume offset the $274-million negative impact of market conditions. The unit contribution decreased from 5.4¢/kWh in 2011 to 4.1¢/kWh in 2012, mainly due to lower prices on energy markets.

As at December 31, 2012, reservoir storage stood at 110.7 TWh, compared to 102.8 TWh a year earlier. The division's energy reserve continues to fully meet the criteria set for management of risks related to the security of the energy supply.

### ELECTRICITY AND FUEL PURCHASES

Electricity and fuel purchases totaled $1,135 million, comparable to 2011. The $58-million decrease in short-term electricity purchases related to exports was offset by electricity purchases of $148 million from Rio Tinto Alcan, notably because of a labor conflict at one of that company's large aluminum smelters in 2012.

### DEPRECIATION AND AMORTIZATION

Depreciation and amortization expense totaled $731 million, compared to $806 million in 2011, a $75-million decrease owing, among other things, to the impact of the definitive shutdown of Tracy thermal generating station in 2011 and the revision, in 2012, of the useful life of certain hydraulic generation assets. These items were partly offset by the impact of the commissioning of capital assets, including the three generating units at Eastmain-1-A powerhouse.

### INVESTING ACTIVITIES

Investments in property, plant and equipment and intangible assets affecting cash totaled $1,511 million in 2012. Of this amount, $951 million went toward hydroelectric development activities, mainly work on the Romaine and Sarcelle jobsites.

Hydro-Québec Production also invested $560 million in asset sustainment and optimization. Work included refurbishment at Robert-Bourassa and Beauharnois generating stations and at the Manicouagan complex.

# Transmission

## Hydro-Québec TransÉnergie

Cedars Rapids Transmission Company, Limited 100%

Hydro-Québec division

Subsidiary held by Hydro-Québec and under the responsibility of Hydro-Québec TransÉnergie

**BREAKDOWN OF 2012 INVESTMENTS BY HYDRO-QUÉBEC TRANSÉNERGIE**

Hydro-Québec TransÉnergie operates and develops Hydro-Québec's power transmission system. It markets system capacity and manages power flows throughout Québec.

The operations of Hydro-Québec TransÉnergie are regulated by the Régie de l'énergie.

### RATE CASE

For 2012, the revenue authorized by the Régie de l'énergie for transmission rate-setting purposes totaled $2,992 million, including $2,624 million in native-load transmission revenue (representing a $21-million decrease compared to 2011) and $368 million for short- and long-term point-to-point transmission services.

### OPERATING RESULTS

Hydro-Québec TransÉnergie's result from continuing operations was $581 million in 2012, compared to $429 million in 2011. This $152-million increase was partly due to variances in revenue from point-to-point transmission services. In addition, depreciation and amortization expense decreased by $52 million, mainly because of the revision, in 2012, of the useful life of certain transmission line and substation assets. Financial expenses decreased by $63 million.

Hydro-Québec TransÉnergie also recorded a negative result from discontinued operations of $9 million on account of the definitive shutdown of Gentilly-2 nuclear generating station at the end of 2012.

### INVESTING ACTIVITIES

In 2012, Hydro-Québec TransÉnergie invested $1,423 million in property, plant and equipment and intangible assets affecting cash, namely $688 million for growth projects and $735 million for asset sustainment projects. The purpose of growth projects is to increase transmission capacity in response to higher load demand or new customer requests and to connect new hydroelectric facilities and wind farms to the grid. The asset sustainment projects involve keeping facilities in good operating condition, improving service quality and complying with the legal and regulatory requirements for operating a power transmission system.

Growth projects represented close to half of the division's investments in 2012. Major projects included the integration of the output from wind farms built in response to the call for tenders issued by Hydro-Québec Distribution in 2005 (2,000 MW), which accounted for $190 million, and the extension of the transmission system in Minganie in order to connect the Romaine complex (1,550 MW), which accounted for $239 million.

In the asset sustainment category, Hydro-Québec TransÉnergie invested $539 million in equipment replacement and facility modernization. It also invested $147 million in enhancing service quality, including $63 million for the addition of a 735/315-kV section at Bout-de-l'Île substation.

# Distribution

## Hydro-Québec Distribution

Hydro-Québec division

Hydro-Québec Distribution provides electricity to the Québec market and delivers reliable power and quality services to its customers with a view to efficiency and sustainable development. In this context, it also promotes energy efficiency among its customers.

The division's activities are regulated by the Régie de l'énergie, which has exclusive jurisdiction to set electricity rates.

### RATE CASE

In March 2012, the Régie de l'énergie approved an across-the-board electricity rate decrease of 0.45%, effective April 1, 2012.

### SUPPLYING THE QUÉBEC MARKET

Hydro-Québec Distribution relies on various sources to supply the Québec market. To meet requirements in excess of the heritage pool (165 TWh) reserved for it by Hydro-Québec Production, the division issues short- and long-term calls for tenders. For requirements of less than three months, it may also buy electricity directly on the market, without tendering, under an authorization granted by the Régie de l'énergie. For unforeseen needs that cannot be met otherwise, the division relies on a framework agreement with Hydro-Québec Production that covers the period from January 1, 2009, to December 31, 2013. The agreement was approved by the Régie in 2009.

In November 2012, Hydro-Québec Distribution filed a second progress report on the Electricity Supply Plan 2011–2020 with the Régie de l'énergie. This follow-up provided an updated demand forecast for the Québec market and outlined the events that have influenced supply planning and the division's actions since the plan was filed in November 2010.

Finally, Hydro-Québec Distribution is continuing its efforts to promote energy efficiency. In 2012, its initiatives generated new energy savings of 1,118 GWh, for a cumulative total of 7.6 TWh since 2003.

### OPERATING RESULTS

Hydro-Québec Distribution posted a result from continuing operations of $503 million in 2012 compared to $374 million in 2011, an increase of $129 million. Revenue from electricity sales decreased, mainly due to the mild temperatures in 2012 and lower demand from industrial customers, which was partly offset by higher demand from residential customers. The decrease in revenue from electricity sales was mitigated by revenue variances related to climate conditions and variances in the annual cost of native-load transmission service, among other things. On the expenditure side, transmission costs, net of the decrease in electricity purchases, rose by $29 million. In addition, $37 million payable to the Québec government was recorded under the *Act respecting Energy Efficiency and Innovation*. These negative items were more than offset by decreases of $72 million and $67 million in depreciation and amortization expense and financial expenses, respectively.

## ELECTRICITY SALES IN QUÉBEC BY CATEGORY

| | Sales volume | | | Sales revenue | | |
|---|---|---|---|---|---|---|
| | **2012** | 2012–2011 change | | **2012** | 2012–2011 change | |
| Customer category | TWh | TWh | % | $M | $M | % |
| Residential and farm | **62.3** | (0.4) | (0.6) | **4,481** | (55) | (1.2) |
| Commercial and institutional | **34.0** | 0.4 | 1.2 | **2,624** | 25 | 1.0 |
| Industrial | **65.9** | (1.7) | (2.5) | **3,010** | (252) | (7.7) |
| Other | **5.3** | – | – | **292** | 1 | 0.3 |
| Total | **167.5** | (1.7) | (1.0) | **10,407** | (281) | (2.6) |

## FACTORS IN THE 2012–2011 CHANGE IN SALES BY CATEGORY

| | Volume effects | | | | | | | Price effects | | | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Baseload demand | | Temperatures | | February 29 | | **Total** | Rate adjustments | Other | **Total** | |
| Customer category | TWh | $M | TWh | $M | TWh | $M | $M | $M | $M | $M | $M |
| Residential and farm | 1.0 | 72 | (1.7) | (116) | 0.3 | 19 | **(25)** | (22) | (8) | **(30)** | **(55)** |
| Commercial and institutional | 0.3 | 10 | – | – | 0.1 | 8 | **18** | (13) | 20 | **7** | **25** |
| Industrial | (1.9) | (104) | – | (3) | 0.2 | 8 | **(99)** | (9) | (144) | **(153)** | **(252)** |
| Other | – | 5 | – | (1) | – | 1 | **5** | – | (4) | **(4)** | **1** |
| Total | (0.6) | (17) | (1.7) | (120) | 0.6 | 36 | **(101)** | (44) | (136) | **(180)** | **(281)** |

### ELECTRICITY SALES IN QUÉBEC

Revenue from electricity sales totaled $10,407 million, a $281-million decrease compared to 2011, mainly due to the mild temperatures in 2012 as well as lower demand in the industrial sector, which was partly offset by higher demand from residential customers. Revenue from special contracts with certain large industrial customers in Québec decreased on account of aluminum prices and the exchange rate. Risks related to special contracts are absorbed by Hydro-Québec Production.

Sales volume totaled 167.5 TWh compared to 169.2 TWh in 2011, a 1.7-TWh decrease. On one hand, temperatures were mild in 2012 whereas they had been closer to normal in 2011, resulting in a 1.7-TWh or $120-million decrease. Temperatures therefore had a negative impact of $232 million in 2012, compared to $112 million in 2011. On the other hand, there was a 2.1-TWh or $109-million reduction in demand from industrial customers, which was partly offset by a 1.0-TWh or $72-million increase in demand from residential customers.

### OTHER REVENUE

Other revenue increased by $259 million compared to 2011, due in part to the change in amounts recognized as revenue variances related to climate conditions and variances in the annual cost of native-load transmission service.

Revenue variances related to climate conditions correspond to differences between Hydro-Québec Distribution's actual transmission and distribution revenue and the revenue forecasts established on the basis of the climate normal for rate application purposes. An amount of $122 million was recognized in this regard as receivable from customers in 2012, compared to $61 million in 2011, for a positive change of $61 million stemming from the fact that temperatures were mild in 2012, whereas they had been closer to normal in 2011.

Variances in the annual cost of native-load transmission service are the result of changes in cost that have not been taken into account in the setting of electricity rates. An amount of $17 million was recognized in this regard as payable to customers in 2012, compared to $46 million in 2011, for a positive change of $29 million.

**BREAKDOWN OF 2012 INVESTMENTS BY HYDRO-QUÉBEC DISTRIBUTION (EXCLUDING THE EEP[a])**

a) EEP: Energy Efficiency Plan

### ELECTRICITY PURCHASES AND TRANSMISSION COSTS

Net electricity purchases increased by $21 million compared to 2011 because of an increase in electricity purchases from independent power producers as a result of the calls for tenders issued in 2003 and 2005 for the supply of 3,000 MW of wind energy. These purchases were mitigated by a decrease in electricity purchases from Hydro-Québec Production, mainly on account of the mild temperatures in 2012.

The cost of native-load transmission service decreased by $21 million in 2012. It should also be noted that Hydro-Québec Distribution annually adjusts its transmission costs to factor in the recognition of Hydro-Québec TransÉnergie's variance account for revenue from point-to-point transmission services. In 2012, a $10-million reduction was recorded in this regard, compared to a $47-million reduction in 2011, resulting in a negative change of $37 million.

### DEPRECIATION AND AMORTIZATION

Depreciation and amortization expense totaled $679 million, compared to $751 million in 2011. This $72 million decrease is mainly due to the revision, in 2012, of the useful life of certain distribution line and substation assets.

## INVESTING ACTIVITIES

In 2012, Hydro-Québec Distribution's investments in property, plant and equipment and intangible assets affecting cash totaled $874 million.

Of this amount, $336 million went toward handling the growth of the Québec customer base, including $183 million for new customer hookups. The division also invested $310 million in asset sustainment and $38 million to improve service quality, including $24 million for the distribution automation program, which will permit remote monitoring of equipment and improvements in system reliability indicators.

Hydro-Québec Distribution also invested $144 million in the Energy Efficiency Plan.

# Construction

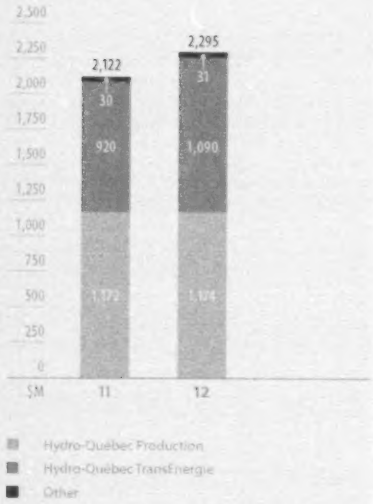
## Hydro-Québec Équipement et services partagés

Société d'énergie de la Baie James — 100%

Hydro-Québec division

Subsidiary held by Hydro-Québec and under the responsibility of Hydro-Québec Équipement et services partagés

**BREAKDOWN OF CONSTRUCTION SEGMENT ACTIVITIES**




The Construction segment includes activities related to the projects carried out by Hydro-Québec Équipement et services partagés[1] and by Société d'énergie de la Baie James (SEBJ).

Hydro-Québec Équipement et services partagés is responsible for construction and refurbishment projects throughout Québec, except in the territory governed by the *James Bay and Northern Québec Agreement* (JBNQA). SEBJ builds generating facilities in the territory governed by the JBNQA (north of the 49th parallel) and may carry out certain projects outside Québec.

As engineering, construction and environmental specialists, Hydro-Québec Équipement et services partagés and SEBJ offer Hydro-Québec Production and Hydro-Québec TransÉnergie a variety of services needed for draft-design studies, impact assessments and other undertakings in the context of energy-related projects. These services include technical and scientific surveys, planning, cost estimates, design, architecture, geomatics and quality control.

### VOLUME OF ACTIVITY

Hydro-Québec Équipement et services partagés and SEBJ carried out activities amounting to a total of $2,295 million in 2012, compared to $2,122 million the previous year. As in 2011, the high volume can be attributed to several large-scale projects. Work done for Hydro-Québec Production totaled $1,174 million, compared to $1,172 million in 2011, while work done for Hydro-Québec TransÉnergie totaled $1,090 million, compared to $920 million.

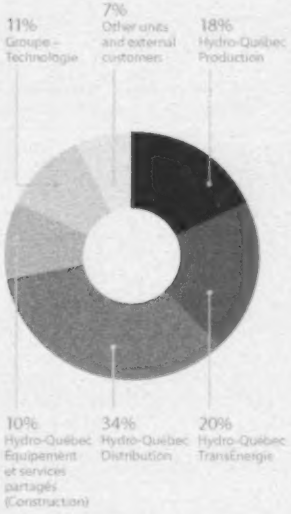
### MAIN ACHIEVEMENTS

In 2012, Hydro-Québec Équipement et services partagés and SEBJ carried out power generation and transmission projects amounting to a total of $2,264 million, compared to $2,092 million in 2011. Work under way for Hydro-Québec Production includes construction of the Romaine complex, completion of the Eastmain-1-A/Sarcelle/Rupert project and the refurbishment of several facilities, such as Robert-Bourassa and Beauharnois generating stations. For Hydro-Québec TransÉnergie, the division continued work to connect the Romaine complex and to reinforce the grid supplying Bécancour industrial park. It also integrated output from seven wind farms contracted for by Hydro-Québec Distribution. In addition, it worked on upgrading various facilities in the main transmission system while pursuing other projects to increase transmission system capacity.

1. The operations of the Direction principale – Centre de services partagés are included under Corporate and Other Activities.

## Corporate and Other Activities

**BREAKDOWN OF 2012 REVENUE: DIRECTION PRINCIPALE – CENTRE DE SERVICES PARTAGÉS**




This heading includes corporate activities, the Direction principale – Centre de services partagés and the Groupe – Technologie.

### RESULTS

Corporate and Other Activities recorded a net result of $111 million in 2012, comparable to the 2011 figure.

### CORPORATE ACTIVITIES

Corporate activities consist of the Vice-présidence – Ressources humaines; financial services, which are provided by two departments; and the Groupe – Affaires corporatives et secrétariat général.

The Vice-présidence – Ressources humaines develops strategies, guidelines, frameworks, corporate programs and objectives in matters pertaining to human resources management, labor relations, compensation and employee benefits, organizational performance, health and safety, and skills development. Its mission includes providing certain products and services in these areas to the entire company. In addition, it ensures that Management can count on optimum human resources conditions.

The Vice-présidence – Comptabilité et contrôle is responsible for overseeing financial, regulatory and management accounting frameworks as well as integrated business risk management. It also has the task of producing and analyzing the company's consolidated financial statements. Its other duties include financial planning, taxation, control, human resources–related financial transactions and disbursements related to accounts payable.

The Vice-présidence – Financement, trésorerie et caisse de retraite is in charge of meeting the company's financing requirements, managing its treasury and maintaining relations with Hydro-Québec bondholders and rating agencies. It also acts as trustee of Hydro-Québec's pension fund. As at December 31, 2011, the date of the most recent valuation for funding purposes, the pension plan's funding ratio was 99.4%, which means that the assets held are adequate to cover future pension costs. In 2012, Hydro-Québec's pension fund had a 10.3% rate of return. Over a 10-year period, namely from 2003 to 2012, it posted an average annual return of 8.0%, placing it in the first quartile of pension funds of comparable size.

The Groupe – Affaires corporatives et secrétariat général provides support services and strategic consulting in the areas of communications, public affairs, environment, ethics as well as government and institutional relations. It is also responsible for services and expertise related to legal affairs as well as safety and security of persons and property. In addition, it coordinates strategic planning and the company's contribution to the electrification of ground transportation. The Secretary General assists the President and Chief Executive Officer in carrying out the company's mandate and acts as Secretary to the Board of Directors and the Board committees at Hydro-Québec and its subsidiaries.

### DIRECTION PRINCIPALE – CENTRE DE SERVICES PARTAGÉS

The Direction principale – Centre de services partagés, which is part of Hydro-Québec Équipement et services partagés, develops strategies, guidelines and frameworks pertaining to procurement and services common to the entire company. It provides divisions and corporate units with support services, at least cost and adapted to their needs, so that they can focus on their core activities. These services include procurement of goods and services, real estate management, document management, materials management as well as transportation, food and accommodation services.

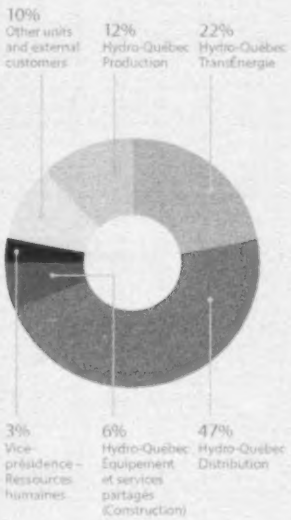
Its revenue totaled $464 million in 2012, comparable to the $470 million recorded in 2011.

## Groupe – Technologie

Corporate unit

Subsidiary held by Hydro-Québec and under the responsibility of Groupe – Technologie

**BREAKDOWN OF 2012 REVENUE RELATED TO INFORMATION AND COMMUNICATION TECHNOLOGY ACTIVITIES**




GROUPE – TECHNOLOGIE

The Groupe – Technologie is composed primarily of the Direction principale – Télécommunications, the Direction principale – Technologie de l'information, Hydro-Québec's research institute and the subsidiaries Hydro-Québec IndusTech and Hydro-Québec CapiTech. The group's mandate is to ensure the integrated management of technological innovation and the optimal management of telecommunications and information system infrastructure. With this in mind, it has continued to implement an overall vision for systems governance, architecture and security in order to capitalize on the convergence of technologies and thereby contribute to improving the company's overall performance.

In the area of technological innovation, Hydro-Québec is interested, among other things, in battery materials, which are crucial to the development of electric mobility. In 2012, Hydro-Québec and its partners granted sublicences to use lithium metal phosphates (LMP) to the German corporation BASF and the Belgian company Prayon. A licence was also granted to Bathium Canada to use LMP in the manufacturing of lithium-metal-polymer batteries.

*DIRECTION PRINCIPALE – TÉLÉCOMMUNICATIONS AND DIRECTION PRINCIPALE – TECHNOLOGIE DE L'INFORMATION*

The Direction principale – Télécommunications and the Direction principale – Technologie de l'information enhance the efficiency of all divisions and corporate units by offering technology solutions in line with Hydro-Québec's business priorities.

In 2012, these two units posted revenue of $576 million, compared to $557 million in 2011.

*RESEARCH INSTITUTE*

Hydro-Québec's research institute, IREQ, provides technical assistance to the divisions and carries out technological innovation projects to support their operations and ensure the long-term development of Hydro-Québec. The company allocates approximately $100 million annually to IREQ's activities.

*HYDRO-QUÉBEC INDUSTECH*

The mission of Hydro-Québec IndusTech is to partner with the private sector in industrializing and marketing technologies resulting from Hydro-Québec's research activities. Among other things, it is responsible for TM4, a company active in the field of electric powertrain systems. In 2012, a joint venture held in equal shares by TM4 and Prestolite Electric Beijing was launched to manufacture and market TM4-designed motors in China and other southeast Asian countries. In addition, a partnership between TM4 and Bombardier Recreational Products (BRP) will permit the development of an electric propulsion system for BRP's light recreational vehicles, including the Can-Am Spyder hybrid roadster.

**Investing activities**

In 2012, the Groupe – Technologie's investments totaled $109 million, of which $100 million was earmarked for maintaining asset quality, $6 million for development activities, and $3 million for meeting growth in demand.

## Outlook

Hydro-Québec is targeting a net result of $2,725 million for the Québec government's 2013–2014 fiscal year.

The company plans to invest approximately $4.9 billion in 2013, a large portion of which, $2.2 billion, will be devoted to the operations of Hydro-Québec TransÉnergie, and $1.5 billion to the operations of Hydro-Québec Production. More than half of Hydro-Québec's investments will be earmarked for development and growth activities. The remainder will go toward facility maintenance and improvements.

**Hydro-Québec Production** will continue its major hydroelectric development projects, including work at the Romaine-2, Romaine-1 and Romaine-3 jobsites. The Romaine complex's four generating stations are slated for commissioning between 2014 and 2020. In addition, the division will continue investing to ensure the long-term operability of its facilities and improve their efficiency. For example, it is refurbishing some of the units at Robert-Bourassa generating station as part of a project that will extend until 2020.

**Hydro-Québec TransÉnergie** will devote a large part of its investments to development in order to integrate new hydroelectric and wind capacity into its system. Specifically, it will continue connecting various wind farms built in response to Hydro-Québec Distribution's calls for tenders and working on the project to extend the transmission system in Minganie to connect the Romaine complex. The division will also continue to invest in maintenance and improvement activities to ensure the reliability and long-term operability of its transmission assets and enhance service quality. An example of this is the addition and modification of equipment on the 315-kV transmission system in the Québec–Montréal corridor, which, among other things, involves building a 735/315-kV section at Bout-de-l'Île substation.

**Hydro-Québec Distribution** will continue to deliver reliable power and high-quality services to Québec customers. It will make further investments to handle the growth of the Québec customer base and to maintain and improve the quality of its facilities. It will also continue to implement the Energy Efficiency Plan, which includes measures for low-income households. In addition, as part of the remote meter reading project, which was approved by the Régie de l'énergie in October 2012, it will install 3.75 million next-generation meters by 2018 in order to roll out an advanced metering infrastructure.

## Integrated Business Risk Management

For a number of years, Hydro-Québec has applied an integrated business risk management process that is now part of its ongoing activities. This process is supported by various control, communication and assessment mechanisms that enable it to monitor risk developments on a dynamic basis.

Hydro-Québec's divisions and corporate units are central to the process. As part of their ongoing activities, they manage the risks to which they are exposed and reassess them on a regular basis, daily in some cases. In concrete terms, each division or corporate unit must determine and assess its main risks and then develop and apply mitigation measures to ensure that residual business risks are at a level acceptable to Hydro-Québec. During the annual planning process, this exercise results in a consolidated portfolio of residual business risks. This consolidated portfolio is presented to the Board of Directors with the Business Plan, which includes an analysis of the sensitivity of the net result to the principal risks. The divisions and corporate units report on their risk management activities and follow-up to the Management Committee, which acts as a risk management committee to provide overall monitoring of business risks.

### ANNUAL INTEGRATED BUSINESS RISK MANAGEMENT PROCESS

| | January 1 – 1st four-month period | April 30 – 2nd four-month period | August 31 – 3rd four-month period | December 31 |
|---|---|---|---|---|
| | | | **Business Plan** | |
| Hydro-Québec Units | Division or group monitoring plans covering main business risks | | | |
| | Division or group risk management reports – April review in the form of highlights | Division or group risk management reports – August review in the form of highlights | | |
| | | Identification of risks and validation by division/group president | Preparation or revision of division or group business risk portfolios – Supporting documents for evaluation | |
| Hydro-Québec Management | **Management Committee and Segment Committees** (in risk management mode) | **Management Committee and Segment Committees** (in risk management mode) | **Management Committee and Segment Committees** (in risk management mode) | |
| | Review of risk management reports | Review of risk management reports | Review of each division's or group's risk portfolio and discussion | |
| | | | **Management Committee acting as the Risk Management Committee with the President and CEO as CRO** | |
| | | | Review of consolidated enterprise risk portfolio, risk map, probability of reaching net result | |
| Board of Directors | | | **Finance Committee** | |
| | | | Presentation of consolidated enterprise risk portfolio, risk map, probability of reaching net result | |
| | | | **Audit Committee** | |
| | | | President and CEO's report on integrated enterprise business risk management process | |
| | | | **Board of Directors** | |
| | | | Presentation of consolidated enterprise risk portfolio, risk map, probability of reaching net result | |

## FINANCIAL RISKS

In the course of its operations, Hydro-Québec carries out transactions that expose it to certain financial risks, such as market, credit and liquidity risk. Rigorous follow-up and the adoption of strategies that include the use of derivative instruments considerably reduce exposure to such risks and their impact on results.

### MARKET RISK

Hydro-Québec's results are subject to different types of market risk associated mainly with fluctuations in the Canadian dollar's exchange rate compared to the U.S. dollar as well as fluctuations in interest rates and aluminum prices. Exchange rate fluctuations affect revenue from sales denominated in U.S. dollars as well as the cost of U.S. dollar–denominated debt and swaps. Interest rate fluctuations affect financial expenses, pension costs and the authorized return on equity of regulated divisions. Aluminum price fluctuations have an impact on revenue from special contracts with certain large industrial customers in Québec.

The three types of market risk are subject to active integrated management, in particular through derivative financial products. The purpose of such management is to limit the impact of market risk on Hydro-Québec's short-term results, according to strategies and criteria established based on the company's risk tolerance. Furthermore, Hydro-Québec can count on certain offsetting factors that mitigate its market risk over the medium and long term. For example, it holds debt and swaps denominated in U.S. dollars as a hedge against sales in that currency. The effect of exchange rate fluctuations on sales is thus offset by exchange gains or losses on debt in U.S. dollars. There is also an offsetting effect between the impact of a general increase or decrease in interest rates on financial expenses, on the one hand, and the impact of such an increase or decrease on pension costs and the authorized return on equity of regulated divisions, on the other.

### CREDIT RISK

Credit risk is the risk that a counterparty may not meet its contractual obligations. Hydro-Québec is exposed to credit risk related to receivables through ongoing energy sales in Québec. These sales are billed at rates that provide for cost recovery according to conditions approved by the Régie de l'énergie. The company is also exposed to credit risk related to the cash equivalents, short-term investments and derivative instruments traded with financial institutions and other issuers and, to a lesser extent, with North American energy companies under Hydro-Québec Distribution supply contracts and Hydro-Québec Production energy transactions on markets outside Québec.

Exposure to credit risk is mitigated by the implementation of limits and frameworks for risk concentration and level of exposure by counterparty. To ensure compliance with such limits and frameworks, Hydro-Québec takes a proactive approach based on various controls and monitoring reports. These enable it to react quickly to any event that could have an impact on the financial condition of its counterparties. In addition, the company generally does business with counterparties that have a high credit rating. It also enters into agreements to limit the market value of the main portfolios of derivative instruments.

### LIQUIDITY RISK

Liquidity risk is the risk that a company may have difficulty meeting commitments related to its financial liabilities. This type of risk may translate into difficulties accessing sources of financing for its investment program.

Hydro-Québec's liquidity risk is mitigated by several factors, including substantial cash flows from operating activities, access to a preauthorized standby credit facility and a diversified portfolio of highly liquid financial instruments. Given the mitigation measures in place, the company considers its level of exposure to liquidity risk to be low.

## OPERATIONAL RISKS

### GENERATION

One of the principal uncertainties that Hydro-Québec faces relates to natural water inflows. Hydro-Québec Production must ensure that it is able to meet its commitments to supply the annual heritage pool of 165 TWh to Hydro-Québec Distribution and fulfill its contractual obligations. In concrete terms, this means being able to cover a natural inflow deficit of 64 TWh over two consecutive years, and 98 TWh over four consecutive years. To meet this requirement, the division applies a variety of mitigation measures and closely monitors them. It therefore manages its reservoir storage on a multiyear basis and maintains an adequate margin between its generating capacity and its commitments. This allows the division to compensate for variations in runoff, replenish its reserves or take advantage of business opportunities. Hydro-Québec regularly reports to the Régie de l'énergie on the generating capacity and energy reserve of Hydro-Québec Production.

In addition to runoff uncertainties, Hydro-Québec Production's export activities on wholesale markets are subject to market risk and the risk of unavailability of generating and transmission equipment. Market risk results from fluctuations in electricity and fuel prices, and is mitigated by ongoing monitoring of trends in wholesale markets and the use of hedging derivative instruments. The risk of unavailability of generating and transmission equipment is maintained at a level deemed acceptable through maintenance and upgrade programs.

The risks related to Hydro-Québec Production's export activities are quantified in an integrated fashion by a team of specialists that is independent of the group carrying out the transactions. This team sees to the application of controls, presents daily reports to Senior Management and ensures compliance with the limits approved by Management and the Board of Directors.

### TRANSMISSION

Several factors, such as extreme weather and equipment failure, may cause service interruptions or result in the unavailability of part of the transmission system. The multifaceted strategy adopted by Hydro-Québec TransÉnergie to prevent these problems includes implementing the standards of the North American Electric Reliability Corporation and the Northeast Power Coordinating Council, as well as measures to maintain and improve transmission facilities and extend their useful life. In 2007, the Régie de l'énergie confirmed the reliability expertise of Hydro-Québec TransÉnergie by designating its Direction – Contrôle des mouvements d'énergie, the unit responsible for system control, as Reliability Coordinator for Québec.

Hydro-Québec TransÉnergie must ensure adequate transmission capacity to supply Hydro-Québec Distribution and other customers, as well as transmission system security and reliability. To do so, the division relies, among other things, on a strategy of ensuring long-term operability of transmission assets and on optimal management of annual peak load.

### DISTRIBUTION

Hydro-Québec Distribution's activities are subject to uncertainty related to fluctuations in demand (under normal climate conditions) due to the economic and energy situation, which have an impact on results. When demand is lower than the forecasts made in the rate case, the division cannot recover from customers all the costs related to power distribution and power transmission through the Hydro-Québec TransÉnergie system. To counter the impact of this risk, the division constantly fine-tunes its method of forecasting demand for electricity.

In addition, Hydro-Québec Distribution applies a series of measures to ensure long-term operability of the distribution system, and hence service quality. These measures include compliance with applicable standards for overhead and underground systems, the implementation of an asset maintenance program and a strategy for asset renewal, as well as vegetation control.

In order to promote better energy use, the division is also pursuing its efforts in the area of energy efficiency.

### CONSTRUCTION

One of the principal risks that Hydro-Québec Équipement et services partagés must deal with is pressure on project costs, due to such factors as the rising cost of labor in the construction industry, higher prices for certain materials or products (such as petroleum products) and events that affect project schedules.

There is also a risk related to the quality and delivery time for components, especially when they are manufactured outside Canada. In addition, the ongoing consolidation of electrical equipment suppliers could affect the medium- and long-term price or availability of such equipment.

Regarding construction time, the division makes respecting schedules a top priority despite the constraints inherent in large-scale capital projects. This is particularly important in the current context of the construction industry in Québec, in which the implementation of legislative and regulatory measures could have an impact on workflows and on Hydro-Québec's ability to deal with certain suppliers. An active monitoring process and contingency measures have been put in place to mitigate the most probable potential impacts of this situation.

To meet its commitments and continue to apply high quality and safety standards, Hydro-Québec Équipement et services partagés has implemented a number of measures that reduce its risk exposure. Specifically, the division closely monitors project schedules, costs and the main deliverables, an approach that enables it to ensure that projects are progressing as planned and take any necessary corrective action. In addition, it maintains ongoing relations with the relevant organizations and government departments to stay abreast of future amendments to laws and regulations that could affect construction costs and deadlines, among other things. It also monitors key indicators for trends in prices and the rate of activity in the construction industry. Finally, it develops procurement strategies that promote competition and maintaining expertise in most markets, and it adjusts its project completion strategies according to economic conditions, in consultation with its customers.

### CORPORATE AND OTHER ACTIVITIES

Environmental protection and conservation are among Hydro-Québec's central concerns. The majority of activities that have a significant impact on the environment are governed by an ISO 14001–certified environmental management system. In addition, every year, the company reviews its management of environmental issues and details them in its Sustainability Report.

Hydro-Québec is also concerned with information security and the risks associated with confidentiality and with the loss of availability or integrity of systems and data as a result of a malicious act, error or natural disaster. It regularly assesses how well its information systems are protected against threats and implements the necessary security measures. These measures include an information and communication technology security program, an antivirus expertise centre, a process for anticipating security threats, Internet filtering, a security monitoring centre, managing of identities and access, and managing of incidents and vulnerabilities.

Finally, Hydro-Québec has a corporate emergency response plan to ensure the continuity of its operations and its mission in case of an exceptional event. The corporate plan integrates the emergency response plans and activities of the business units with the aim of strengthening and improving coordination of the efforts of all internal and external responders, including public authorities.

# MANAGEMENT REPORT

Hydro-Québec's consolidated financial statements and all additional financial information contained in this Annual Report are the responsibility of Management and are approved by the Board of Directors. The consolidated financial statements have been prepared by Management in accordance with Canadian generally accepted accounting principles and take into account the decisions handed down by the Régie de l'énergie with respect to the transmission and distribution of electricity. They include amounts determined based on Management's best estimates and judgment. Financial information presented elsewhere in the Annual Report is consistent with the information provided in the consolidated financial statements.

Management maintains an internal control system which includes communicating Hydro-Québec's rules of ethics and *Code of Conduct* to employees, primarily to ensure the proper management of resources and the orderly conduct of business. The objective of this system is to provide reasonable assurance that the financial information is pertinent and reliable and that the assets of Hydro-Québec are adequately recorded and safeguarded. An internal auditing process allows evaluation of the sufficiency and effectiveness of control, as well as of Hydro-Québec's policies and procedures. Recommendations ensuing from this process are submitted to Management and the Audit Committee.

The Board of Directors is responsible for corporate governance. It assumes its responsibility for the consolidated financial statements principally through its Audit Committee, composed solely of independent directors, who do not hold full-time positions within Hydro-Québec or in one of its subsidiaries. The Audit Committee is responsible for ensuring that the consolidated financial statements present fairly Hydro-Québec's financial position, results of operations and cash flows, and for recommending the consolidated financial statements to the Board of Directors for approval. The Audit Committee meets with Management, the Internal Auditor and the independent auditors to discuss the results of their audits and the resulting findings with respect to the integrity and the quality of Hydro-Québec's financial reporting as well as the effectiveness of its internal control system. The Internal Auditor and the independent auditors have full and unrestricted access to the Audit Committee, with or without Management present.

The 2012 and 2011 consolidated financial statements have been audited jointly by the Auditor General of Québec, KPMG LLP and Ernst & Young LLP.

**/s/ Michael L. Turcotte**
Chairman of the Board

**/s/ Thierry Vandal**
President and Chief Executive Officer

**/s/ Lise Croteau**
Vice-President –
Accounting and Control

Montréal, Québec
February 22, 2013

# INDEPENDENT AUDITORS' REPORT

To the Minister of Finance of Québec:

## REPORT ON CONSOLIDATED FINANCIAL STATEMENTS

We have audited the accompanying consolidated financial statements of Hydro-Québec, which comprise the consolidated balance sheets as at December 31, 2012 and 2011, and the consolidated statements of operations, retained earnings, cash flows and comprehensive income for the years then ended, and the notes, comprising a summary of significant accounting policies and other explanatory information.

### MANAGEMENT'S RESPONSIBILITY FOR THE CONSOLIDATED FINANCIAL STATEMENTS

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Canadian generally accepted accounting principles, and for such internal control as Management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

### AUDITORS' RESPONSIBILITY

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by Management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained in our audits is sufficient and appropriate to provide a basis for our audit opinion.

### OPINION

In our opinion, these consolidated financial statements present fairly, in all material respects, the consolidated financial position of Hydro-Québec as at December 31, 2012 and 2011, and its consolidated results of operations and its consolidated cash flows for the years then ended, in accordance with Canadian generally accepted accounting principles.

## REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

As required by the *Auditor General Act* (R.S.Q., c. V-5.01), we report that, in our opinion, for the year ended December 31, 2012, these principles have been applied on a basis consistent with that of the preceding year.

**/s/ KPMG LLP**[1]

**/s/ Ernst & Young LLP**[2]

**/s/ Michel Samson, CPA auditor, CA**
Acting Auditor General of Québec

Montréal, Québec
February 22, 2013

1. CPA auditor, CA, public accountancy permit No. A120220
2. CPA auditor, CA, public accountancy permit No. A109499

# CONSOLIDATED FINANCIAL STATEMENTS

## CONSOLIDATED STATEMENTS OF OPERATIONS

| Years ended December 31<br>In millions of Canadian dollars | Notes | 2012 | 2011 |
|---|---|---|---|
| **Revenue** | 3 | **12,228** | 12,245 |
| **Expenditure** | | | |
| Operations | | **2,356** | 2,410 |
| Electricity and fuel purchases | | **1,283** | 1,154 |
| Depreciation and amortization | 4 | **2,415** | 2,603 |
| Taxes | 5 | **997** | 864 |
| | | **7,051** | 7,031 |
| **Operating result** | | **5,177** | 5,214 |
| Financial expenses | 6 | **2,441** | 2,528 |
| **Result from continuing operations** | | **2,736** | 2,686 |
| **Discontinued operations** | 7 | | |
| Operating result | | **(59)** | (75) |
| Write-off of property, plant and equipment under construction | | **(990)** | – |
| Impairment of nuclear generating station assets | | **(827)** | – |
| **Result from discontinued operations** | | **(1,876)** | (75) |
| **Net result** | | **860** | 2,611 |

## CONSOLIDATED STATEMENTS OF RETAINED EARNINGS

| Years ended December 31<br>In millions of Canadian dollars | Note | 2012 | 2011 |
|---|---|---|---|
| Balance, beginning of year | | **14,618** | 13,965 |
| Net result | | **860** | 2,611 |
| | | **15,478** | 16,576 |
| Dividend | 18 | **645** | 1,958 |
| Balance, end of year | | **14,833** | 14,618 |

The accompanying notes are an integral part of the consolidated financial statements.

## CONSOLIDATED BALANCE SHEETS

| As at December 31<br>In millions of Canadian dollars | Notes | 2012 | 2011 |
|---|---|---|---|
| **ASSETS** | | | |
| **Current assets** | | | |
| Cash and cash equivalents | | **2,183** | 1,377 |
| Short-term investments | | **509** | 1,102 |
| Accounts receivable and other receivables | 16 | **1,838** | 1,744 |
| Derivative instruments | 16 | **1,052** | 1,322 |
| Regulatory assets | 2 | **22** | 18 |
| Materials, fuel and supplies | | **178** | 236 |
| | | **5,882** | 5,799 |
| Property, plant and equipment | 8 | **57,174** | 56,901 |
| Intangible assets | 9 | **2,241** | 2,187 |
| Investments | 10 | **134** | 124 |
| Derivative instruments | 16 | **1,269** | 1,313 |
| Regulatory assets | 2 | **18** | 21 |
| Other assets | 11 | **3,799** | 3,292 |
| | | **70,517** | 69,637 |
| **LIABILITIES** | | | |
| **Current liabilities** | | | |
| Borrowings | | **19** | 52 |
| Accounts payable and accrued liabilities | | **2,078** | 2,099 |
| Dividend payable | 18 | **645** | 1,958 |
| Accrued interest | | **835** | 862 |
| Asset retirement obligations | 12 | **178** | 12 |
| Derivative instruments | 16 | **663** | 261 |
| Current portion of long-term debt | 13 | **694** | 1,025 |
| | | **5,112** | 6,269 |
| Long-term debt | 13 | **42,555** | 40,744 |
| Asset retirement obligations | 12 | **774** | 528 |
| Derivative instruments | 16 | **1,816** | 2,098 |
| Other long-term liabilities | 14 | **1,003** | 883 |
| Perpetual debt | 15 | **275** | 281 |
| | | **51,535** | 50,803 |
| **EQUITY** | 18 | | |
| Share capital | | **4,374** | 4,374 |
| Retained earnings | | **14,833** | 14,618 |
| Accumulated other comprehensive income | | **(225)** | (158) |
| | | **14,608** | 14,460 |
| | | **18,982** | 18,834 |
| | | **70,517** | 69,637 |
| Commitments and contingencies | 22 | | |

The accompanying notes are an integral part of the consolidated financial statements.

On behalf of the Board of Directors,

**/s/ Jacques Leblanc**
Chair of the Audit Committee

**/s/ Michael L. Turcotte**
Chairman of the Board

## CONSOLIDATED STATEMENTS OF CASH FLOWS

| Years ended December 31<br>In millions of Canadian dollars | Notes | 2012 | 2011 |
|---|---|---|---|
| **Operating activities** | | | |
| Net result | | **860** | 2,611 |
| Adjustments to determine net cash flows from operating activities | | | |
| Depreciation and amortization | 4 | **2,429** | 2,623 |
| Amortization of premiums, discounts and issue expenses related to debt securities | | **286** | 148 |
| Write-off of property, plant and equipment under construction | 7 | **990** | – |
| Impairment of nuclear generating station assets | 7 | **827** | – |
| Other | | **(95)** | 107 |
| Change in non-cash working capital items | 20 | **(94)** | 170 |
| Net change in accrued benefit assets and liabilities | 21 | **(435)** | (498) |
| | | **4,768** | 5,161 |
| **Investing activities** | | | |
| Additions to property, plant and equipment | | **(3,673)** | (3,508) |
| Additions to intangible assets | | **(259)** | (306) |
| Cash receipts from the government reimbursement for the 1998 ice storm | | **8** | 7 |
| Net disposal of short-term investments | | **506** | 128 |
| Other | | **97** | (4) |
| | | **(3,321)** | (3,683) |
| **Financing activities** | | | |
| Issuance of long-term debt | | **2,327** | 4,574 |
| Repayment of long-term debt | | **(1,326)** | (2,867) |
| Cash receipts arising from credit risk management | 16 | **5,320** | 3,898 |
| Cash payments arising from credit risk management | 16 | **(4,962)** | (3,933) |
| Net change in borrowings | | **(38)** | 31 |
| Dividend paid | | **(1,958)** | (1,886) |
| Other | | **(2)** | (2) |
| | | **(639)** | (185) |
| **Foreign currency effect on cash and cash equivalents** | | **(2)** | 4 |
| **Net change in cash and cash equivalents** | | **806** | 1,297 |
| **Cash and cash equivalents, beginning of year** | | **1,377** | 80 |
| **Cash and cash equivalents, end of year** | | **2,183** | 1,377 |
| Supplementary cash flow information | 20 | | |

The accompanying notes are an integral part of the consolidated financial statements.

## CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

| Years ended December 31<br>In millions of Canadian dollars | 2012 | 2011 |
|---|---|---|
| **Net result** | **860** | 2,611 |
| **Other comprehensive income** | | |
| Change in deferred gains (losses) on items designated as cash flow hedges | **192** | (113) |
| Reclassification to operations of deferred gains on items designated as cash flow hedges | **(259)** | (272) |
| | **(67)** | (385) |
| **Comprehensive income** | **793** | 2,226 |

The accompanying notes are an integral part of the consolidated financial statements.

# NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Years ended December 31, 2012 and 2011

Amounts in tables are in millions of Canadian dollars, unless otherwise indicated.

*Under the provisions of the Hydro-Québec Act, Hydro-Québec is mandated to supply power and to pursue endeavors in energy-related research and promotion, energy conversion and conservation, and any field connected with or related to power or energy. Hydro-Québec is required, in particular, to supply a base volume of up to 165 TWh a year of heritage pool electricity for the Québec market, as set out in the Act respecting the Régie de l'énergie. As a government corporation, Hydro-Québec is exempt from paying income taxes in Canada.*

## NOTE 1 Significant Accounting Policies

In September 2010, the Canadian Accounting Standards Board (AcSB) authorized rate-regulated entities to defer the adoption of International Financial Reporting Standards (IFRS) until January 1, 2012, or the beginning of the first fiscal year starting after that date. In May 2012, the AcSB granted these entities an optional one-year extension to make the changeover to IFRS. Since Hydro-Québec was entitled to exercise these deferral rights, it opted to prepare its 2012 and 2011 financial statements in accordance with Canadian generally accepted accounting principles as set forth in Part V of the *Canadian Institute of Chartered Accountants Handbook*, "Pre-Changeover Accounting Standards" (Canadian GAAP). In October 2012, the AcSB granted rate-regulated entities an additional one-year extension to make the changeover to IFRS. Consequently, Hydro-Québec could decide to present its 2013 financial statements in accordance with Canadian GAAP.

Hydro-Québec's consolidated financial statements also reflect the decisions of the Régie de l'énergie (the "Régie"). These decisions may affect the timing of the recognition of certain transactions in the consolidated operations, resulting in the recognition of regulatory assets and liabilities, which Hydro-Québec considers it is likely to recover or settle subsequently through the rate-setting process.

### REGULATION

The *Act respecting the Régie de l'énergie* grants the Régie exclusive authority to determine or modify the rates and conditions under which electricity is transmitted and distributed by Hydro-Québec. Hydro-Québec's electricity transmission and distribution activities in Québec are therefore regulated. Under this legislation, rates are set by reasoned decision of three commissioners after public hearings. Moreover, the Act stipulates that rates are determined on a basis that allows for recovery of the cost of service plus a reasonable return on the rate base.

The Régie and Hydro-Québec are both part of the Québec government reporting entity. However, the Régie is an independent, quasi-judicial economic regulatory agency accountable to the National Assembly of Québec through the Minister of Natural Resources.

In decision D-2012-021, the Régie authorized changes to certain accounting policies applied by the Transmission Provider and the Distributor for rate-setting purposes, effective in 2012, in order to ensure compliance with IFRS. These changes concern the recognition of asset retirement obligations according to IAS 37, *Provisions, Contingent Liabilities and Contingent Assets*, and IFRIC 1, *Changes in Existing Decommissioning, Restoration and Similar Liabilities*, and the recognition of employee benefits according to IAS 19, *Employee Benefits*. In addition, the net amount of accrued benefit assets and liabilities is no longer included in the rate base.

*Transmission*

Hydro-Québec's power transmission rates for 2012 and 2011 were determined in Régie decisions D-2012-066 and D-2011-061, respectively, and became effective on January 1, 2012, and January 1, 2011, respectively. The authorized return on the rate base was set at 6.84% in 2012 and 7.21% in 2011, assuming a capitalization with 30% equity.

*Distribution*

Hydro-Québec's electricity rates were determined in decisions D-2012-035 and D-2011-036, in which the Régie authorized an across-the-board rate reductions of 0.45% and 0.41%, effective April 1, 2012, and April 1, 2011, respectively. The authorized return on the rate base was set at 6.80% in 2012 and 7.26% in 2011, assuming a capitalization with 35% equity.

### SCOPE OF CONSOLIDATION

The consolidated financial statements include the accounts of Hydro-Québec, its subsidiaries and its joint ventures as well as those of variable interest entities where Hydro-Québec is the primary beneficiary. Interests in joint ventures are accounted for using the proportionate consolidation method.

### USE OF ESTIMATES

The preparation of financial statements in accordance with Canadian GAAP requires that Management make estimates and assumptions that affect the amounts recognized as assets and liabilities, the disclosures regarding contingent assets and liabilities at the date of the consolidated financial statements and the amounts recognized as revenue and expenditure for the years at issue. The estimates relate, among other things, to revenue, which includes estimated amounts for electricity delivered but not billed; the useful life of property, plant and equipment and intangible assets for calculating the depreciation and amortization expense; cash flows; the expected timing of payments; and the discount rates used to determine asset retirement obligations and employee future benefits. These rates are based on actuarial and economic assumptions. Actual results could differ from those estimates and such differences could be significant.

### REVENUE

Substantially all the revenue comes from electricity sales. Revenue from these sales is recognized on delivery. Revenue also includes certain amounts that Hydro-Québec is entitled to receive from customers or is required to pay to them in the future. These amounts relate, among other things, to the supply of electricity in excess of the heritage pool, to transmission services and to climate conditions. These items give rise to financial assets and liabilities that are reported in Accounts receivable and other receivables and Other assets or in Accounts payable and accrued liabilities and Other long-term liabilities, based on their maturities, which range from one to five years.

Other revenue is recognized on delivery of the goods or services.

## FOREIGN CURRENCY TRANSLATION

*Self-sustaining foreign operations*

The financial statements of foreign operations that are self-sustaining in terms of financial and operational management are translated according to the current rate method using the foreign currency as the measuring unit. Under this method, assets and liabilities are translated into Canadian dollars at the exchange rate in effect at the balance sheet date, and revenue and expenditure are translated at the average exchange rate in effect during the period. The exchange gains or losses resulting from the translation of the financial statements of these foreign operations are presented in Accumulated other comprehensive income under Equity on the balance sheet.

*Integrated foreign operations and foreign currency transactions*

In the case of foreign operations that are integrated in terms of financial and operational management, as well as foreign currency transactions, accounts stated in foreign currencies are translated according to the temporal method. Under this method, monetary assets and liabilities are translated into Canadian dollars at the exchange rate in effect at the balance sheet date, and non-monetary items are translated at the historical exchange rate. Revenue and expenditure arising from foreign currency transactions are translated into Canadian dollars at the exchange rate in effect at the transaction date. The exchange gains or losses resulting from the translation of monetary items are included in operations, unless they relate to hedging items for future sales in U.S. dollars, in which case they are recognized in Other comprehensive income until the period in which such sales are made.

## FINANCIAL INSTRUMENTS

Financial instruments are measured at fair value on initial recognition. Their measurement in subsequent periods and the recognition of any changes in fair value depend on the category in which they are classified.

The following table presents the classification of financial instruments in the various categories:

| Category | Financial Instruments |
|---|---|
| Financial assets and liabilities held for trading | |
| Designated | Cash and cash equivalents |
| Classified | Derivative instruments |
| Available-for-sale financial assets | Short-term investments |
| Loans and receivables | Accounts receivable and other receivables |
| | Government reimbursement for the 1998 ice storm, presented in Other assets |
| | Receivables presented in Other assets |
| Other financial liabilities | Borrowings |
| | Accounts payable and accrued liabilities |
| | Dividend payable |
| | Accrued interest |
| | Current portion of long-term debt |
| | Long-term debt |
| | Accounts payable presented in Other long-term liabilities |
| | Perpetual debt |

Financial assets and liabilities are offset when certain criteria are met. The net amount is therefore reported in the balance sheet when Hydro-Québec has a legally enforceable right to set off the recognized amounts and it intends either to settle on a net basis, or to realize the asset and settle the liability simultaneously.

Moreover, futures or forward contracts on non-financial items that can be settled on a net basis are recorded at the date of settlement if there is a probability of receipt or delivery in accordance with expected requirements.

Financial assets and liabilities held for trading are recorded at fair value at the balance sheet date. Changes in fair value are recognized in operations for the period in which they occur, except in the case of derivative instruments designated as hedges in a cash flow hedging relationship.

Available-for-sale financial assets are recorded at fair value at the balance sheet date. Changes in fair value are recorded in Other comprehensive income until they are realized, at which time they are reclassified to operations. Interest on these assets, calculated using the effective interest method, is recognized in operations.

Loans and receivables, less any impairment losses, as well as other financial liabilities are measured at amortized cost using the effective interest method. Amortized cost includes transaction costs, premiums and discounts, if applicable. Interest is recognized in operations.

As part of its integrated business risk management, Hydro-Québec uses various financial instruments to manage its market risk, consisting of currency risk, interest rate risk and risk resulting from fluctuating aluminum and energy prices. Hydro-Québec applies cash flow or fair value hedge accounting to the eligible hedging relationships. It formally documents all relationships between hedging instruments and hedged items. This process involves associating all derivative instruments with specific assets and liabilities on the balance sheet, or with probable anticipated transactions. Hydro-Québec also measures the effectiveness of hedging relationships initially and then monthly thereafter. In addition, for hedges of anticipated transactions, it regularly assesses the probability of the occurrence of those transactions designated as hedged items.

In the case of a cash flow hedge, the effective portion of changes in the fair value of an instrument designated as a hedge is recognized under Other comprehensive income, while the ineffective portion is immediately recognized in operations, under the line item affected by the hedged item. Amounts included in Accumulated other comprehensive income are reclassified to operations, also under the line item affected by the hedged item, during the periods in which the change in cash flows attributable to the hedged item affects operations. If a derivative instrument no longer satisfies hedging conditions or is sold or liquidated, or if Hydro-Québec terminates its designation as a hedging item, hedge accounting ceases to be applied on a prospective basis. Previously recognized gains and losses continue to be carried forward to be recognized in operations during the same periods as the hedged item. If the hedged item ceases to exist, the gains or losses carried forward are immediately reclassified to operations.

In the case of a fair value hedge, changes in the fair value of the derivative instrument, including those related to the ineffective portion of the hedge, are recognized in operations under the line item affected by the hedged item. Offsetting changes in the fair value of the hedged item attributable to the hedged risk are recognized as adjustments to the hedged item's carrying amount and are offset against operations.

In addition, an embedded derivative must be separated from its host contract and recognized at fair value on the balance sheet if certain conditions are met. Hydro-Québec has opted to apply this accounting treatment to all host contracts issued, acquired or substantively amended on or after January 1, 2003.

## NOTE 1 Significant Accounting Policies (continued)

Hydro-Québec must classify the fair value measurements of financial instruments according to a three-level hierarchy, based on the type of inputs used in making these measurements:

- Level 1: Quoted prices on active markets for identical instruments;
- Level 2: Significant inputs and value drivers that are observable on markets; and
- Level 3: One or more significant inputs or value drivers that are not observable market data.

Cash, cash equivalents, short-term investments and derivative instruments are recognized at fair value. Fair value is the amount of the consideration that would be agreed upon in an arm's length transaction between knowledgeable, willing parties who are under no compulsion to act. Cash equivalents consist of investments with a maturity of three months or less from the date of acquisition. Investments with a maturity of more than three months are presented in Short-term investments.

Except for cash and measurements of exchange-traded derivative instruments, which are Level 1 measurements, fair value measurements for financial instruments are Level 2 measurements. These measurements are obtained by discounting future cash flows, which are estimated on the basis of the spot rates or the forward rates or prices (foreign exchange rates, interest rates, and aluminum or energy prices) in effect on the balance sheet date and take into account the credit risk assessment. The valuation techniques make use of observable market data.

### MATERIALS, FUEL AND SUPPLIES

Inventories of materials, fuel and supplies are valued at the lower of cost and net realizable value. Cost is determined by the weighted average cost method.

### PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are carried at cost, which comprises materials, labor, other costs directly related to construction activities, and financial expenses capitalized during construction. Property, plant and equipment also include draft-design costs for projects whose technical feasibility has been demonstrated, whose profitability has been estimated, and for which Management deems that it will in all likelihood have the necessary resources for completion. The discounted value of retirement obligations related to property, plant and equipment is added to the carrying amount. Moreover, contributions from third parties are applied against the cost of the related property, plant and equipment.

Financial expenses capitalized to property, plant and equipment under construction are determined using the average cost of Hydro-Québec's long-term debt. When the property, plant and equipment under construction relate to regulated transmission and distribution activities, such financial expenses take return on equity into account. The portion that corresponds to return on equity is included in Revenue in the consolidated operations.

Property, plant and equipment are depreciated over their useful life, using the straight-line method, starting in the month following the date of commissioning. The depreciation periods for the principal categories of property, plant and equipment are as follows:

| | |
|---|---|
| Hydraulic generation | 40 to 120 years |
| Thermal generation | 15 to 50 years |
| Nuclear generation | 15 to 50 years |
| Transmission substations and lines | 30 to 70 years |
| Distribution substations and lines | 25 to 60 years |
| Other property, plant and equipment | 5 to 50 years |

When property, plant and equipment are retired, their cost, net of accumulated depreciation and salvage value, is recognized in operations for the year.

Maintenance and repair costs are recognized in operations when incurred.

### INTANGIBLE ASSETS

Intangible assets are recorded at cost. Financial expenses are capitalized over the development period.

The costs related to the Energy Efficiency Plan (EEP), and internally developed computer software and development costs are capitalized when they meet capitalization criteria.

Intangible assets with an indefinite useful life are not amortized. These assets are tested for impairment annually or more frequently if events indicate a potential impairment loss. The excess of the carrying amount over the fair value is recognized in operations for the period in which the impairment is determined.

Intangible assets with a finite useful life, namely the EEP, software and licences, development costs and patents, are amortized over their useful life according to the straight-line method over the following periods:

| | |
|---|---|
| EEP | 10 years |
| Software and licences | 3 to 10 years |
| Development costs | 5 years |
| Patents | 20 years |

### IMPAIRMENT OF LONG-LIVED ASSETS

Hydro-Québec reviews the carrying amount of its property, plant and equipment and its amortizable intangible assets whenever events or changes in circumstances indicate that the expected undiscounted net cash flows could be lower than the carrying amount of the property and assets. An impairment loss corresponding to the amount by which the carrying amount exceeds fair value is recognized, if applicable.

## INVESTMENTS

Investments in companies over which Hydro-Québec can exercise significant influence are accounted for on an equity basis. These investments are initially recognized at cost, and the carrying amount is increased or decreased by an amount equal to Hydro-Québec's share of the changes in the investees' net assets after the date of acquisition. Hydro-Québec's share of the investees' operations is recognized in the net result. Dividends received from the investees are applied against the carrying amount of the investment.

## EMPLOYEE FUTURE BENEFITS

Hydro-Québec offers all its employees a contributory defined-benefit pension plan based on final pay, as well as other post-retirement and post-employment benefits.

The cost of pension benefits and other post-retirement benefits provided in exchange for current service is calculated according to the projected benefit method prorated on years of service. It is determined using a discount rate and is based on Management's best estimates, in particular concerning the expected return on plan assets, salary escalation, the increase in health care costs, and employees' retirement ages. Plan assets are measured at fair value at the balance sheet date.

In order to establish the cost of benefits and its employee future benefit obligations, Hydro-Québec has adopted the following policies:

- The discount rate is based on the average rate of the interest rate curve on the measurement date of high-quality Canadian corporate bonds and takes into account the expected cash flows associated with the accrued benefit obligations.
- Past service costs arising from plan amendments and transitional balances relating to the pension plan and post-retirement benefits as at January 1, 1999, are amortized using the straight-line method over periods not exceeding active employees' average remaining years of service, which was 12 years as at January 1, 2012 and 2011.
- Amortization of actuarial gains or losses is recognized in operations for the year if the unamortized net actuarial gain or loss at the beginning of the year exceeds 10% of the value of the accrued benefit obligations or 10% of the market-related value of the plan assets, whichever is greater. The amortization corresponds to the excess divided by active employees' average remaining years of service.
- The expected return on pension plan assets is based on a market-related value determined by using a five-year moving average value for equity securities and by measuring other asset classes at fair value.

## ASSET RETIREMENT OBLIGATIONS

Hydro-Québec accounts for asset retirement obligations in the period in which the legal obligations with respect thereto arise, provided that a reasonable estimate of their fair value can be made. The corresponding costs of asset retirement are added to the carrying amount of the related long-lived asset and are amortized over its useful life. In subsequent financial years, any change due to the passage of time is recognized in operating expenses for the current year (accretion expense) and the corresponding amount is added to the carrying amount of the liability. Changes resulting from revisions to the timing or the amount of the undiscounted cash flows are recognized as an increase or decrease in the carrying amount of the liability arising from asset retirement obligations, and the related asset retirement cost is capitalized as part of the carrying amount of the related asset.

The cash flows required to settle asset retirement obligations are estimated on the basis of studies that use various assumptions concerning the methods and timing to be adopted for the retirement. Hydro-Québec periodically reviews the measurement of these obligations in light of the underlying assumptions and estimates, potential technological advances, and changes in applicable standards, laws and regulations.

## AGREEMENTS WITH LOCAL COMMUNITIES

Hydro-Québec has entered into various agreements with the local communities concerned by certain capital projects. The amounts under these agreements are recognized in Long-term debt if they fall within the definition of a liability, and the offsetting item is recognized in Property, plant and equipment. The recognized amounts are determined by discounting the future cash flows related to these agreements. The discount rate used is the interest rate on Hydro-Québec bonds at the initial recognition date. Subsequently, in the case of agreements with indexed cash flows, the cash flows are subject to an annual re-estimation that can result in a change in the discount rate.

## RELATED PARTY TRANSACTIONS

In the normal course of business, Hydro-Québec enters into various business transactions, including electricity sales, with the Québec government and its agencies, as well as with other government corporations. These business transactions are measured at the exchange amount.

## NOTE 2 Effects of Rate Regulation on the Consolidated Financial Statements

The following information describes the impact on the consolidated financial statements of accounting methods and practices adopted by Hydro-Québec in accordance with the Régie's decisions with respect to regulated activities.

### REGULATORY ASSETS

*Costs related to the de-icing system at Lévis substation*

Certain costs related to the Lévis substation de-icing system, designed in the wake of the 1998 ice storm to secure the transmission lines supplying the greater Québec area, were recognized in a separate account. These costs have been amortized using the straight-line method starting from the date of commissioning of the de-icing system, over a period corresponding to the average remaining useful life of the assets enhanced by the system. Financial expenses arising from these costs were capitalized at the rate of return authorized by the Régie on the rate base until such time as they were included in the rate base and amortization began. The Régie authorized this accounting practice in decision D-2004-175, which relates to Hydro-Québec's power transmission activities. Were these activities not regulated, the costs would have been recognized in operations for the year in which they were incurred, and the net result for 2012 would have been $1 million higher ($1 million in 2011).

*Costs related to the customer systems optimization project*

Certain costs incurred for the customer systems optimization (CSO) project that had not been taken into account in setting rates and had been recognized in a separate account were amortized in 2012. Financial expenses arising from these costs were capitalized at the rate of return authorized by the Régie on the rate base until such time as amortization began. This accounting practice was authorized by the Régie in decision D-2011-058, which relates to Hydro-Québec's power distribution activities. Were these activities not regulated, the costs would have been recognized in operations for the year in which they were incurred, and the net result for 2012 would have been $10 million higher ($7 million lower in 2011).

*Costs related to projects of more than $10 million pending approval*

Costs related to projects of more than $10 million that were included in a rate application, but that are pending approval at the time the decision on the rate application is handed down, are recognized in a separate account until the projects are approved by the Régie and amortized over the subsequent fiscal year. Financial expenses arising from these costs are capitalized at the rate of return authorized by the Régie on the rate base until such time as amortization begins. This accounting practice was authorized by the Régie in decision D-2012-024, which relates to Hydro-Québec's power distribution activities. Were these activities not regulated, the costs would be recognized in operations for the year in which they are incurred, and the net result for 2012 would have been $10 million lower (nil in 2011).

**REGULATORY ASSETS**

| | Expected years of amortization | 2012 | 2011 |
|---|---|---|---|
| Costs related to the de-icing system at Lévis substation | 2013–2047 | **9** | 10 |
| Costs related to the CSO project | – | **–** | 10 |
| Costs related to projects of more than $10 million pending approval[a] | 2013 | **14** | 4 |
| Other | 2013–2014 | **17** | 15 |
| | | **40** | 39 |
| Current portion | | **22** | 18 |
| | | **18** | 21 |

a) These costs are associated with the remote meter reading project, which the Régie authorized in decision D-2012-127. In 2011, the costs related to this project, which amounted to $4 million, were presented under Other; these costs have been reclassified to conform to the presentation adopted in the current year.

*Risks and uncertainties*

The risks and uncertainties related to the above regulatory assets are subject to periodic monitoring and assessment. Once Hydro-Québec considers that it is no longer likely that the net carrying amount of a regulatory asset will be taken into account in setting future rates, this amount is recognized in operations for the year in which the conclusion is reached.

### OTHER REGULATORY PRACTICES

Under Régie decisions D-2002-95 and D-2003-93, the compensation granted by the Québec government for the 1998 ice storm was applied against the cost of newly constructed property, plant and equipment; it is amortized over the remaining life of the retired assets, with the exception of the portion equivalent to the unamortized cost of these assets, which is amortized over 10 years. The straight-line method is used in both cases. Were those activities not regulated, the compensation would be amortized over the useful life of the newly constructed property, plant and equipment.

In decisions D-2002-95 and D-2004-47, the Régie prescribed capitalizing financial expenses to property, plant and equipment under construction and intangible assets under development related to regulated activities, according to the authorized rates of return on the rate bases. These rates, which are set using methods approved by the Régie, take into account a component associated with the cost of the debt and a component associated with the return on equity. Were these activities not regulated, financial expenses would be capitalized using the average cost of Hydro-Québec's long-term debt.

Under Régie decisions D-2002-95 and D-2003-93, the cost of dismantling assets that were retired and replaced, net of the salvage value, is added to the cost of newly constructed assets. Under Régie decision D-2011-039, which relates to Hydro-Québec's power transmission activities, the costs of restoring sites associated with replaced assets are also added to the cost of newly constructed assets. Were these activities not regulated, the related costs would be charged to operations in the year in which they are incurred.

Under Régie decisions D-2006-76 and D-2006-76R, contributions received for relocation or modification projects relating to certain transmission grid assets are recognized in a separate account and applied against property, plant and equipment. These contributions are amortized over the average useful life of assets for each project, using the straight-line method. Were these activities not regulated, the contributions would be amortized over the useful life of each fixed asset concerned.

Under Régie decisions D-2002-25, D-2002-288, D-2003-93 and D-2006-56, advertising and promotional costs, entertainment expenses, training costs and other EEP general expenses incurred until December 31, 2011, were recognized in the costs related to this intangible asset and will be amortized over 10 years on a straight-line basis. Were these activities not regulated, the costs and expenses would have been recognized in operations for the year in which they were incurred. As of January 1, 2012, under Régie decision D-2012-031, these costs are recognized in operations for the year in which they are incurred.

Finally, the legal and regulatory context in which Hydro-Québec operates gives it the right to receive from its customers or the obligation to pay to them, as the case may be, the amounts corresponding to any variance between the actual amount of certain specific items and the amount provided in rate cases for these items. These items therefore give rise to financial assets or liabilities. They include the supply of electricity in excess of the heritage pool (decisions D-2005-34, D-2005-132, D-2006-34, D-2007-12 and D-2008-024), fuel purchases (decision D-2009-016), native-load transmission service (decisions D-2003-93, D-2006-34, D-2007-12 and D-2008-024), climate conditions (decisions D-2006-34 and D-2009-016), point-to-point transmission service (decisions D-2007-08 and D-2008-019) and pension costs (decisions D-2011-028, D-2011-039, D-2012-024 and D-2012-099).

## NOTE 3 Revenue

| | 2012 | 2011 |
|---|---|---|
| Electricity sales | **11,736** | 11,972 |
| Other | **492** | 273 |
| | **12,228** | 12,245 |

## NOTE 4 Depreciation and Amortization

| | 2012 | 2011 |
|---|---|---|
| Property, plant and equipment | **2,047**[a] | 2,279 |
| Intangible assets | **241** | 212 |
| Regulatory assets | **19** | 9 |
| Retirement of capital assets | **108** | 103 |
| | **2,415**[b] | 2,603[b] |

a) The revision of the useful life of property, plant and equipment in 2012 resulted in a $181-million decrease in the depreciation expense for the year. As part of this revision, the maximum depreciation period for some hydraulic generation assets increased from 100 to 120 years, while the maximum period for certain transmission line and substation assets increased from 50 to 70 years, and for certain distribution line and substation assets, from 40 to 60 years.

b) The depreciation and amortization expense presented in the consolidated statements of cash flows also includes an amount of $14 million for assets related to operations discontinued in 2012 ($20 million in 2011).

## NOTE 5 Taxes

| | 2012 | 2011 |
|---|---|---|
| Water power royalties[a] | **621** | 598 |
| Public utilities tax[b] | **252** | 244 |
| Municipal, school and other taxes | **124**[c] | 22 |
| | **997** | 864 |

a) Water power royalties payable to the Québec government totaled $617 million in 2012 ($593 million in 2011), including a balance due of $25 million as at December 31, 2012 ($63 million as at December 31, 2011).

b) The public utilities tax is paid to the Québec government.

c) Including $49 million payable to the Québec government under the *Act to establish the Northern Plan Fund* (nil in 2011), of which a balance of $39 million was outstanding as at December 31, 2012, to be paid in installments of $10 million per year from 2013 to 2016, and $27 million payable to the Québec government under the *Act respecting Energy Efficiency and Innovation* (nil in 2011).

## NOTE 6 Financial Expenses

| | 2012 | 2011 |
|---|---|---|
| Interest on debt securities | 2,576 | 2,662 |
| Net exchange loss (gain) | 2 | (5) |
| Guarantee fees related to debt securities[a] | 197 | 188 |
| | 2,775 | 2,845 |
| Less | | |
| Capitalized financial expenses | 306 | 300 |
| Net investment income | 28 | 17 |
| | 334 | 317 |
| | 2,441 | 2,528 |

a) Guarantee fees related to debt securities are paid to the Québec government.

## NOTE 7 Discontinued Operations

In September 2012, the decision was made to abandon the project to refurbish Gentilly-2 nuclear generating station and to terminate all nuclear power operations. The facility continued to generate electricity until the end of 2012, in accordance with the terms and conditions of its operating licence, after which time Hydro-Québec started to prepare it for dormancy with a view to dismantling it around the year 2060.

The abandonment of the refurbishment project led to the write-off of the property, plant and equipment under construction for this project, for a total amount of $990 million.

Gentilly-2's operating result is presented under discontinued operations in the consolidated statements of operations for all periods concerned. For segmented information purposes, these activities are classified under Generation and Transmission.

In addition, as indicated in Note 12, Asset Retirement Obligations, Hydro-Québec had to review the key assumptions underlying the calculation parameters and estimated amount of the asset retirement obligations related to the dismantling of Gentilly-2 at the end of its useful life, particularly as regards the start date of work, which was moved forward. This review resulted in a $365-million increase in the asset retirement obligations related to the facility and in the facility's carrying amount.

Since the refurbishment project was abandoned, Hydro-Québec also had to test all of its nuclear generation assets for impairment. The carrying amount of these assets, including the increase in the asset retirement obligations related to the facility's dismantling, was compared to their fair value, which was determined using the discounted cash flow method. An impairment charge of $827 million was recognized, reducing the carrying amount of the nuclear generation assets to zero.

The following table provides a breakdown of the result from discontinued operations:

| | 2012 | 2011 |
|---|---|---|
| **Operating result** | | |
| Revenue | 144 | 147 |
| Expenditure | 203 | 222 |
| | (59) | (75) |
| **Write-off of property, plant and equipment under construction** | (990) | – |
| **Impairment of nuclear generating station assets** | | |
| Property, plant and equipment[a] | (795) | – |
| Materials, fuel and supplies | (32) | – |
| | (827) | – |
| | (1,876) | (75) |

a) Including the $365-million increase in the asset retirement obligations related to the facility's dismantling.

## NOTE 8 Property, Plant and Equipment

| | 2012 | | | |
|---|---|---|---|---|
| | In service | Accumulated depreciation | Under construction | Net carrying amount |
| **Generation** | | | | |
| Hydraulic | 40,306 | 14,850 | 3,753 | **29,209** |
| Thermal | 784 | 737 | – | **47** |
| Nuclear[a] | 2,329 | 2,329 | – | **–** |
| Other[a] | 775 | 478 | 20 | **317** |
| | 44,194 | 18,394 | 3,773 | **29,573** |
| **Transmission** | | | | |
| Substations and lines[a] | 25,177 | 9,322 | 1,215 | **17,070** |
| Other[a] | 2,273 | 1,313 | 105 | **1,065** |
| | 27,450 | 10,635 | 1,320 | **18,135** |
| **Distribution** | | | | |
| Substations and lines | 12,659 | 5,382 | 358 | **7,635** |
| Other | 2,862 | 1,662 | 168 | **1,368** |
| | 15,521 | 7,044 | 526 | **9,003** |
| **Construction** | 30 | 18 | 1 | **13** |
| **Corporate and Other Activities** | 1,113 | 738 | 75 | **450** |
| | 88,308 | 36,829 | 5,695 | **57,174** |

a) The abandonment of nuclear power operations led to the recognition of an impairment charge of $795 million for property, plant and equipment in service and to a write-off of $990 million of property, plant and equipment under construction in 2012, as indicated in Note 7, Discontinued Operations.

| | 2011 | | | |
|---|---|---|---|---|
| | In service | Accumulated depreciation | Under construction | Net carrying amount |
| **Generation** | | | | |
| Hydraulic | 39,723 | 14,205 | 2,857 | 28,375 |
| Thermal | 782 | 721 | – | 61 |
| Nuclear | 1,921 | 1,550 | 852 | 1,223 |
| Other | 764 | 441 | 15 | 338 |
| | 43,190 | 16,917 | 3,724 | 29,997 |
| **Transmission** | | | | |
| Substations and lines | 24,478 | 8,729 | 806 | 16,555 |
| Other | 2,248 | 1,318 | 104 | 1,034 |
| | 26,726 | 10,047 | 910 | 17,589 |
| **Distribution** | | | | |
| Substations and lines | 12,273 | 5,116 | 341 | 7,498 |
| Other | 2,810 | 1,602 | 154 | 1,362 |
| | 15,083 | 6,718 | 495 | 8,860 |
| **Construction** | 27 | 16 | 1 | 12 |
| **Corporate and Other Activities** | 1,085 | 700 | 58 | 443 |
| | 86,111 | 34,398 | 5,188 | 56,901 |

## NOTE 9 Intangible Assets

| | 2012 | | | 2011 | | |
|---|---|---|---|---|---|---|
| | Cost | Accumulated amortization | Net carrying amount | Cost | Accumulated amortization | Net carrying amount |
| **Intangible assets** | | | | | | |
| **Subject to amortization** | | | | | | |
| EEP | 1,548 | 555 | **993** | 1,403 | 429 | 974 |
| Software and licences | 1,495 | 949 | **546** | 1,392 | 869 | 523 |
| Development costs | 52 | 28 | **24** | 41 | 23 | 18 |
| Patents | 23 | 9 | **14** | 22 | 7 | 15 |
| | 3,118 | 1,541 | **1,577** | 2,858 | 1,328 | 1,530 |
| **Not subject to amortization** | | | | | | |
| Servitudes | | | **382** | | | 375 |
| Water-power rights | | | **282** | | | 282 |
| | | | **664** | | | 657 |
| | | | **2,241** | | | 2,187 |

The additions of internally generated intangible assets subject to amortization totaled $261 million in 2012 ($308 million in 2011).

## NOTE 10 Investments

| | 2012 | 2011 |
|---|---|---|
| **At equity** | | |
| Churchill Falls (Labrador) Corporation Limited | **115** | 106 |
| CITEQ inc. | **(5)** | (5) |
| | **110** | 101 |
| **Other** | **24** | 23 |
| | **134** | 124 |

## NOTE 11 Other Assets

| | Note | 2012 | 2011 |
|---|---|---|---|
| Accrued benefit assets | 21 | **3,380** | 2,887 |
| Government reimbursement for the 1998 ice storm[a] | | **59** | 67 |
| Receivables[b] | | **332** | 238 |
| Other | | **28** | 100 |
| | | **3,799** | 3,292 |

a) Payable in quarterly installments of $6 million until January 15, 2010, followed by quarterly installments of $3 million between April 15, 2010, and October 15, 2019, and a final installment of $0.4 million on January 15, 2020. These installments include interest at an annual rate of 7.2%. The current portion, presented under Accounts receivable and other receivables, totaled $9 million as at December 31, 2012 ($8 million as at December 31, 2011). The fair value of this financial asset, including the current portion, was $81 million as at December 31, 2012 ($91 million as at December 31, 2011).

b) Including assets of $329 million related to variances between the actual amount of certain specific items and the amount provided in rate cases for these items ($231 million as at December 31, 2011). These assets are capitalized at the rate of return authorized by the Régie, such that their carrying amount approximates their fair value. They are recovered over a one- to five-year period.

## NOTE 12 Asset Retirement Obligations

Liabilities arising from asset retirement obligations relate to the costs to be incurred in dismantling Gentilly-2 nuclear generating station, the removal of spent nuclear fuel resulting from its operation, and the dismantling of thermal generating stations and certain fuel tanks and transmission substations. The abandonment of the project to refurbish Gentilly-2 generating station, as indicated in Note 7, Discontinued Operations, prompted a review of the key assumptions underlying the calculation parameters and estimated amount of the obligations related to the dismantling of the facility at the end of its useful life. The main impact of this review was to advance the start of work by 27 years.

The aggregate carrying amount of asset retirement obligations is as follows:

| | | | | 2012 |
|---|---|---|---|---|
| | Dismantling of nuclear generating station[a] | Removal of spent nuclear fuel[a] | Dismantling of other assets | Total |
| Balance, beginning of year | 208 | 201 | 131 | **540** |
| Liabilities incurred | – | 12 | – | **12** |
| Accretion expense | 15 | 18 | 4 | **37** |
| Liabilities settled | – | (2) | (5) | **(7)** |
| Revision of estimated cash flows and expected timing of payments | 365 | – | 5 | **370** |
| Balance, end of year | 588 | 229 | 135 | **952** |
| Less | | | | |
| Current portion | 122 | 3 | 53 | **178** |
| | 466 | 226 | 82 | **774** |

| | | | | 2011 |
|---|---|---|---|---|
| | Dismantling of nuclear generating station[a] | Removal of spent nuclear fuel[a] | Dismantling of other assets | Total |
| Balance, beginning of year | 197 | 187 | 120 | 504 |
| Liabilities incurred | – | 2 | 19 | 21 |
| Accretion expense | 11 | 17 | 6 | 34 |
| Liabilities settled | – | (1) | (3) | (4) |
| Revision of estimated cash flows and expected timing of payments | – | (4) | (11) | (15) |
| Balance, end of year | 208 | 201 | 131 | 540 |
| Less | | | | |
| Current portion | – | 2 | 10 | 12 |
| | 208 | 199 | 121 | 528 |

a) The Québec government has provided an irrevocable financial guarantee of up to $685 million to the Canadian Nuclear Safety Commission for the performance of Hydro-Québec's obligations with regard to the cost of dismantling Gentilly-2 generating station and the removal of spent nuclear fuel.

The carrying amount of the asset retirement obligations is based on the following key assumptions:

| | Dismantling of nuclear generating station | Removal of spent nuclear fuel | Dismantling of other assets |
|---|---|---|---|
| Estimated cash flows (in constant dollars) required to settle the obligations[a] | | | |
| As at December 31, 2012 | 1,192 | 663 | 172 |
| As at December 31, 2011 | 951 | 624 | 173 |
| Expected timing of payment of the cash flows required to settle the obligations | | | |
| As at December 31, 2012 | Between 2013 and 2062 | Between 2013 and 2164 | Between 2013 and 2092 |
| As at December 31, 2011 | Between 2040 and 2071 | Between 2012 and 2164 | Between 2012 and 2092 |
| Credit quality–adjusted, risk-free rate (%) | | | |
| Initial recognition of obligations | 6.4 | 6.4 | Between 1.0 and 6.4 |
| Subsequent recognition of obligations | Between 5.0 and 5.7 | 5.5 and 5.7 | Between 1.2 and 6.1 |

a) Inflation rates varying between 1.9% and 2.7% were used to determine the asset retirement obligations.

## NOTE 12 Asset Retirement Obligations (continued)

### HYDRO-QUÉBEC NUCLEAR FUEL WASTE MANAGEMENT TRUST FUND

On November 15, 2002, the *Nuclear Fuel Waste Act* came into force. Under this Act, Canadian nuclear energy corporations were required to set up a waste management organization whose role would be to propose a long-term approach for managing spent nuclear fuel to the Government of Canada. Each nuclear energy corporation was also required to set up a trust fund to finance the costs of long-term management of its nuclear fuel waste. In November 2005, the Nuclear Waste Management Organization (NWMO) filed its report with the Government of Canada and recommended an approach which was adopted in June 2007.

In October 2007, the members of the NWMO ratified an agreement that sets forth a formula for financing the costs of long-term nuclear fuel waste management. This formula, approved by the Canadian Minister of Natural Resources in April 2009, is used to determine each member's share for the coming years, based on the number of spent nuclear fuel bundles produced at a given date. It also takes into account the date on which each member plans to start shipping spent nuclear fuel bundles to the future national repository site.

The amounts deposited in the trust funds can only be used to finance the application of the approach adopted by the Government of Canada. As at December 31, 2012, the investments held in the Hydro-Québec trust fund were composed of Hydro-Québec securities, the fair value of which totaled $112 million ($99 million as at December 31, 2011).

Hydro-Québec's nuclear fuel waste management trust fund is considered a variable interest entity of which Hydro-Québec is the primary beneficiary.

## NOTE 13 Long-Term Debt

Long-term debt is mainly composed of bonds, medium-term notes and other debts, including liabilities under agreements entered into with local communities. The following table presents a breakdown of the debt at amortized cost, including the current portion, by currency at the time of issue and at the time of repayment. Currency swaps and forward contracts traded for currency risk management purposes related to long-term debt were taken into account in determining the percentages of debt by currency at the time of repayment.

| | 2012 | | | | 2011 | | | |
|---|---|---|---|---|---|---|---|---|
| | | | At time of issue | At time of repayment | | | At time of issue | At time of repayment |
| | In Canadian dollars and other currencies | At closing exchange rates as at the balance sheet date | % | % | In Canadian dollars and other currencies | At closing exchange rates as at the balance sheet date | % | % |
| **Hydro-Québec's debt** | | | | | | | | |
| Canadian dollars[a] | 33,681 | **33,681** | **79** | **99** | 32,755 | 32,755 | 79 | 98 |
| U.S. dollars | 8,757 | **8,705** | **20** | **1**[b] | 8,021 | 8,148 | 20 | 2[b] |
| Other currencies | | | | | | | | |
| Euros | 60 | **79** | **–** | **–** | 60 | 79 | – | – |
| Pounds sterling | 199 | **322** | **1** | **–** | 199 | 314 | 1 | – |
| Yen | 1,000 | **11** | **–** | **–** | 2,000 | 26 | – | – |
| | | **42,798** | | | | 41,322 | | |
| **Subsidiaries' debt** | | | | | | | | |
| U.S. dollars | 14 | **14** | **–** | **–** | 17 | 17 | – | – |
| | | **42,812** | **100** | **100** | | 41,339 | 100 | 100 |
| Plus | | | | | | | | |
| Adjustment for fair-value hedged risk | | **437** | | | | 430 | | |
| | | **43,249** | | | | 41,769 | | |
| Less | | | | | | | | |
| Current portion | | **694** | | | | 1,025 | | |
| | | **42,555** | | | | 40,744 | | |

a) Including non-interest-bearing debts other than bonds and medium-term notes for a discounted amount of $1,113 million as at December 31, 2012 ($939 million as at December 31, 2011).

b) 100% of which was used to hedge sales in U.S. dollars.

### INTEREST RATES

The following table shows interest rates, which take into account stated interest rates on bonds and medium-term notes, including premiums, discounts and issue expenses, as well as the effect of swaps traded for currency risk and interest rate risk management purposes related to long-term debt:

| % | | | | 2012 | 2011 |
|---|---|---|---|---|---|
| Maturity | Canadian dollars | U.S. dollars | Other currencies | Weighted average | Weighted average |
| 1 to 5 years | 2.54 | 1.72 | 9.32 | **2.65** | 3.34 |
| 6 to 10 years | 9.91 | 9.10 | – | **9.66** | 10.22 |
| 11 to 15 years | 7.50 | 8.31 | – | **8.30** | 8.60 |
| 16 to 20 years | 3.73 | 9.71 | – | **7.52** | 7.64 |
| 21 to 25 years | 5.62 | – | – | **5.62** | 5.61 |
| 26 to 30 years | 5.11 | – | – | **5.11** | 5.11 |
| 31 to 35 years | 4.89 | – | – | **4.89** | 4.89 |
| 36 to 40 years | 4.35 | – | – | **4.35** | 4.55 |
| 41 to 45 years | – | – | – | **–** | – |
| 46 to 50 years | 6.53 | – | – | **6.53** | 6.53 |
| 51 to 55 years | – | – | – | **–** | – |
| Weighted average | 5.18 | 8.36 | 9.32 | **5.54** | 5.70 |

As at December 31, 2012, the floating-rate portion of long-term debt amounted to 9.0%, or 9.6% including perpetual debt (6.1%, or 6.8% including perpetual debt, as at December 31, 2011).

### FAIR VALUE

As at December 31, 2012, the fair value of the long-term debt, including the current portion, amounted to $58,894 million ($57,697 million as at December 31, 2011). Including swaps and forward contracts traded for currency risk and interest rate risk management purposes related to long-term debt, it totaled $59,471 million ($57,958 million as at December 31, 2011). Fair value is obtained by discounting future cash flows, and is calculated on the basis of forward interest rates derived from interest rates at the close of business on the balance sheet date for similar instruments traded on capital markets. Changes in fair value reflect sensitivity to capital market interest rates. However, Management's primary intention is to hold these debt securities until maturity.

### CREDIT FACILITY AND LINES OF CREDIT

Hydro-Québec has an undrawn credit facility of US$1,640 million ($1,632 million), including a US$595-million ($592 million) swing loan, which will expire in 2013. Any debt securities will bear interest at a rate based on the London Interbank Offered Rate (LIBOR), except for the swing loan, which is at the U.S. base rate. Hydro-Québec also has access to undrawn lines of credit totaling $406 million, which are renewed automatically in the absence of notice to the contrary and bear interest at the prime rate.

## NOTE 14 Other Long-Term Liabilities

| | Note | 2012 | 2011 |
|---|---|---|---|
| Accrued benefit liabilities | 21 | **847** | 789 |
| Accounts payable | | **156** | 94 |
| | | **1,003** | 883 |

## NOTE 15 Perpetual Debt

Perpetual notes in the amount of $275 million (US$276 million) as at December 31, 2012, and $281 million (US$276 million) as at December 31, 2011, bear interest at LIBOR, plus 0.0625%, as calculated semiannually. The notes are redeemable at Hydro-Québec's option. In 2012, none of these notes were redeemed. In 2011, a portion amounting to $13 million was repurchased on the secondary market and then canceled. Various derivative instruments are used to mitigate the currency risk associated with this debt.

As at December 31, 2012 and 2011, the rates applicable to the perpetual notes were 0.8% and 0.6% respectively. As at December 31, 2012, the fair value of these notes was $232 million ($209 million as at December 31, 2011). Fair value is obtained by discounting future cash flows, and is calculated on the basis of forward interest rates derived from interest rates at the balance sheet date for similar instruments traded on capital markets.

# NOTE 16 Financial Instruments

In the course of its operations, Hydro-Québec carries out transactions that expose it to certain financial risks, such as market, liquidity and credit risk. Exposure to such risks and the impact on results are significantly reduced through careful monitoring and implementation of strategies that include the use of derivative instruments.

## MARKET RISK

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate as a result of changes in market prices. Hydro-Québec is exposed to three main types of market risk: currency risk, interest rate risk and risk associated with aluminum and energy prices. Active integrated management of these three types of risk aims to limit their impact on results through mitigation measures so that exposure to each risk is reduced to an acceptable level.

## MANAGEMENT OF LONG-TERM RISK

*Management of risk associated with sales in U.S. dollars*

Currency risk – Hydro-Québec uses currency swaps and a portion of its U.S. dollar–denominated debt to manage currency risk associated with probable U.S. dollar sales, designating them as cash flow hedges. The impact of these hedging transactions on results is recognized in Revenue.

*Management of risk associated with debt*

Currency risk and interest rate risk – Hydro-Québec uses currency swaps and forward contracts to manage the currency risk associated with long-term debt and perpetual debt, as well as forward contracts and interest-rate swaps to modify long-term exposure to interest rate risk. When designated as hedging items, these derivative instruments are recognized as cash flow hedges or fair value hedges, depending on the risk hedged. The impact on results of foreign currency hedging transactions and those associated with debt interest rates is recognized in Financial expenses.

The following table shows the notional amounts of swaps and forward contracts used to manage risk associated with U.S. dollar sales and with the debt, expressed in Canadian dollars and foreign currencies:

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | **2012**[a] | 2011[a] |
| Maturity | 1 to 5 years | 6 to 10 years | 11 to 15 years | 16 to 20 years | Total | Total |
| **Swaps** | | | | | | |
| Canadian dollars | 286 | (2,381) | (2,226) | (2,120) | **(6,441)** | (6,159) |
| U.S. dollars | 76 | 2,030 | 1,900 | 1,800 | **5,806** | 5,869 |
| Other currencies | | | | | | |
| Euros | 61 | – | – | – | **61** | 61 |
| Pounds sterling | 200 | – | – | – | **200** | 200 |
| Yen | 1,000 | – | – | – | **1,000** | 2,000 |
| **Forward contracts** | | | | | | |
| U.S. dollars | 2,280 | – | – | – | **2,280** | 1,279 |

a) Figures in parentheses represent amounts to be paid.

The following table shows the fair value of swaps and forward contracts used to manage risk associated with U.S. dollar sales and with the debt, expressed in Canadian dollars:

| | 2012 | 2011 |
|---|---|---|
| Derivative instruments designated as cash flow hedges for U.S. dollar sales[a] | **217** | 212 |
| Derivative instruments designated as cash flow hedges for debt | **(1,802)** | (1,817) |
| Derivative instruments designated as fair value hedges for debt | **507** | 489 |
| | **(1,078)** | (1,116) |
| Derivative instruments not designated as hedges[b] | **920** | 1,263 |
| | **(158)** | 147 |

a) Apart from these derivative instruments, a portion of the long-term debt, with a nominal amount of US$351 million as at December 31, 2012 (US$626 million as at December 31, 2011), was also designated as a cash flow hedge for U.S.-dollar sales.

b) These instruments were traded as part of Hydro-Québec's risk management, and $708 million was in consideration of amounts received or disbursed with respect to credit risk mitigation agreements in 2012 ($1,067 million in 2011).

## MANAGEMENT OF SHORT-TERM RISK

Currency risk – Hydro-Québec uses forward contracts to manage its foreign currency risk exposure over the short term. When designated as hedging items, these derivative instruments are recognized as cash flow hedges. The impact of currency risk hedging transactions on results is recognized in the line item affected by the hedged item, namely Revenue, Electricity and fuel purchases, or Financial expenses. The nominal amount of open positions as at December 31, 2012, was US$12 million in sales contracts (US$787 million as at December 31, 2011).

Interest rate risk – Hydro-Québec uses interest rate swaps and forward rate agreements to manage short-term interest rate risk. When designated as hedging items, these derivative instruments are recognized as cash flow hedges. The impact on results of transactions to hedge short-term interest rate risk is recognized in Financial expenses.

Price risk – Hydro-Québec uses mainly swaps and commodity futures to manage risk resulting from fluctuations in aluminum and energy prices. When designated as hedging items, these derivative instruments are recognized as cash flow hedges. The impact on results of transactions to hedge the risk of variability in aluminum and energy prices is recognized in the line item affected by the hedged item, namely Revenue or Electricity and fuel purchases. To hedge exposure to variability in aluminum and energy prices, Hydro-Québec has traded derivative instruments for which open positions as at December 31, 2012, totaled 150,000 tonnes of aluminum (99,900 tonnes as at December 31, 2011), electricity swaps for which open positions as at December 31, 2012, were 17.0 TWh (10.8 TWh as at December 31, 2011), and natural gas futures for which open positions as at December 31, 2012, totaled 1.4 million MMBtu (no open position as at December 31, 2011).

The fair value of derivative instruments used to manage short-term financial risks, depending on whether or not they are designated as hedges, is shown in the table below:

| | 2012 | 2011 |
|---|---|---|
| Derivative instruments designated as cash flow hedges | **(18)** | 133 |
| Derivative instruments not designated as hedges | **18** | (4) |
| | **–**[a] | 129[a] |

a) The balance of financial instruments measured on the basis of quoted stock market prices (Level 1) included in this amount is nil ($3 million in 2011).

## EFFECT OF HEDGES

*Effect of hedges on results*

***Effect of cash flow hedges***

As at December 31, 2012, the net loss related to the ineffectiveness of cash flow hedges recognized in operations totaled $7 million ($3 million as at December 31, 2011).

As at December 31, 2012, Hydro-Québec estimated at $191 million the amount of net gains presented in Accumulated other comprehensive income that would be reclassified to operations in the next 12 months ($192 million as at December 31, 2011).

In 2012, Hydro-Québec did not reclassify any amounts from Accumulated other comprehensive income to operations (net loss of $10 million in 2011) as a result of the discontinuance of cash flow hedges.

As at December 31, 2012, the maximum period during which Hydro-Québec hedged its exposure to the variability of cash flows related to anticipated transactions was four years (five years as at December 31, 2011).

***Effect of fair value hedges***

As at December 31, 2012, the net gain related to the ineffectiveness of fair value hedges recognized in operations totaled $11 million ($9 million as at December 31, 2011).

***Effect of revaluation of derivative instruments not designated as hedges***

As at December 31, 2012, the net loss recognized in operations as a result of the revaluation, at fair value, of derivative instruments to which hedge accounting was not applied totaled $23 million (net gain of $71 million as at December 31, 2011). These instruments are essentially related to risk management transactions.

*Sensitivity analyses*

The risks associated with variability in foreign exchange rates, interest rates, and aluminum and energy prices are the subject of integrated management aimed at limiting the impact of such risks on results. Most of the derivative instruments traded are designated as cash flow hedges or fair value hedges and therefore reduce the volatility of results, except for the ineffective portion of the hedges, which is insignificant. Derivative instruments which are not designated as hedges, but which nonetheless serve to hedge at-risk opposite positions, also reduce the volatility of results. The sensitivity of results is thus limited to net exposure to unhedged risks.

As at December 31, 2012, had the exchange rate (C$/US$1) been 5% higher or lower, the net result would have been $7 million higher or lower, respectively ($8 million as at December 31, 2011), while Other comprehensive income would have been $166 million higher or lower, respectively ($136 million as at December 31, 2011). The analysis is based on financial assets and liabilities denominated in U.S. dollars, including a cash amount of US$84 million (US$124 million as at December 31, 2011). It also takes into account the impact of hedged sales in U.S. dollars.

In 2012, had interest rates been 50 basis points higher or lower, the net result would have been $3 million higher or lower, respectively ($11 million higher or $13 million lower, respectively, in 2011), while Other comprehensive income would have been $85 million higher or $88 million lower ($258 million higher or $269 million lower in 2011).

In 2012, had the price of aluminum been 5% higher or lower, the net result would have been $1 million higher or lower, respectively ($2 million in 2011), taking into account the impact of hedged sales, and Other comprehensive income would have been $16 million lower or higher, respectively ($10 million in 2011).

## LIQUIDITY RISK

Liquidity risk is the risk that an entity will have difficulty meeting commitments related to its financial liabilities.

Hydro-Québec's exposure to this risk is reduced by a large volume of cash flows from operating activities, a diversified portfolio of highly liquid or readily convertible instruments traded with high-quality counterparties, preauthorized sources of financing, the quality of Hydro-Québec's signature on financial markets, diversified sources of financing and its management of the proportions of floating-rate debt and debt repayable in foreign currency.

Moreover, as at December 31, 2012, $39,966 million in long-term debt, perpetual debt and borrowings, net of the sinking fund, was guaranteed by the Québec government ($39,049 million as at December 31, 2011).

## NOTE 16 Financial Instruments (continued)

Maturities of financial liabilities are presented in the following table. The amounts reported are contractual undiscounted cash flows, representing payments of principal and interest for financial liabilities as at December 31, 2012.

| Maturity | Borrowings[a] | Accounts payable and accrued liabilities | Dividend payable | Long-term debt | Derivative instruments[b] |
|---|---|---|---|---|---|
| 2013 | 19 | 1,746 | 645 | 2,988[c] | 820 |
| 2014 | – | 30 | – | 4,395 | 167 |
| 2015 | – | 36 | – | 4,655 | 285 |
| 2016 | – | 36 | – | 3,699 | 152 |
| 2017 | – | – | – | 3,192 | 105 |
| 1 to 5 years | 19 | 1,848 | 645 | 18,929 | 1,529 |
| 6 to 10 years | – | – | – | 18,482 | 820 |
| 11 to 15 years | – | – | – | 9,240[c] | 630 |
| 16 to 20 years | – | – | – | 9,602 | 414 |
| 21 to 25 years | – | – | – | 10,324 | – |
| 26 to 30 years | – | – | – | 8,366 | – |
| 31 to 35 years | – | – | – | 8,747 | – |
| 36 to 40 years | – | – | – | 8,504 | – |
| 41 to 45 years | – | – | – | 1,692 | – |
| 46 to 50 years | – | – | – | 1,299 | – |
| 51 to 55 years | – | – | – | 283 | – |
| 56 years and over | – | – | – | 27,270 | – |
| Total | **19** | **1,848** | **645** | **122,738** | **3,393** |
| Carrying amount | **19**[g] | **1,847**[d,e,f] | **645**[d] | **43,249**[g] | **2,479** |

a) As at December 31, 2012, the weighted average interest rate on interest-bearing borrowings was 1.13% (1.51% as at December 31, 2011).

b) Agreements entered into with certain counterparties to limit the market value of these financial instruments could result in cash receipts or payments at dates different from the initially scheduled maturity.

c) Certain debts carry sinking fund requirements. An amount of $594 million ($594 million as at December 31, 2011) was reported under Short-term investments for this purpose.

d) Because of their short-term maturities, the carrying amount of these financial liabilities approximates their fair value.

e) Including liabilities of $8 million related to variances between the actual amount of certain specific items and the amount provided in rate cases for these items ($99 million as at December 31, 2011), which are classified in Accounts payable and accrued liabilities.

f) Of this amount, $1,746 million is recorded in Accounts payable and accrued liabilities and $101 million in Other long-term liabilities.

g) Including the current portion.

Contractual maturities of perpetual debt, whose terms and conditions are described in Note 15, Perpetual Debt, result in biennial interest flows.

### CREDIT RISK

Credit risk is the risk that one party to a financial asset will fail to meet its obligations.

Hydro-Québec is exposed to credit risk related to cash and cash equivalents, short-term investments and derivative instruments traded with financial institutions. It is also exposed to credit risk related to accounts receivable and other receivables, which arises primarily from its day-to-day energy sales in and outside Québec. Credit risk is limited to the carrying amount presented under assets on the balance sheet, which approximates fair value.

*Cash and cash equivalents, short-term investments and derivative instruments*

In order to reduce its credit risk exposure, Hydro-Québec deals with Canadian and international issuers and financial institutions with high credit ratings. In addition, it applies policies to limit risk concentration as well as various monitoring programs and sets credit limits for each counterparty. Through prior agreements, it can also limit the market value of the main derivative instrument portfolios. Any variation in market value beyond the agreed-upon limit results in a cash receipt or payment. As at December 31, 2012, substantially all counterparties dealing with Hydro-Québec had a credit rating of A- or better, and none of them had defaulted on their obligations to Hydro-Québec.

*Accounts receivable and other receivables*

Exposure to credit risk from energy sales is limited due to Hydro-Québec's large and diverse customer base. Management believes that Hydro-Québec is not exposed to a significant credit risk, particularly because sales in Québec are billed at rates that allow for recovery of costs based on the terms and conditions set by the Régie. Moreover, Hydro-Québec holds as collateral customer deposits totaling $92 million ($82 million as at December 31, 2011), of which $25 million ($21 million as at December 31, 2011) is recognized in Accounts payable and accrued liabilities and $67 million ($61 million as at December 31, 2011) in Other long-term liabilities.

The value of accounts receivable, by age and net of the related allowance for doubtful accounts, is presented in the table below:

| | 2012 | 2011 |
|---|---|---|
| **Accounts receivable** | | |
| Under 30 days[a] | **1,368** | 1,324 |
| 30 to 60 days | **41** | 48 |
| 61 to 90 days | **16** | 20 |
| Over 90 days | **137** | 138 |
| | **1,562** | 1,530 |
| **Other receivables**[b] | **276** | 214 |
| **Accounts receivable and other receivables**[c] | **1,838** | 1,744 |

a) Including unbilled electricity deliveries, which totaled $1,392 million as at December 31, 2012 ($1,121 million as at December 31, 2011).

b) Including a $60-million financial guarantee ($15 million in 2011) covering certain derivative instruments held at year end.

c) Including US$148 million (US$113 million in 2011) translated at the exchange rate in effect at the balance sheet date.

In 2012, the allowance for doubtful accounts increased by $4 million ($34 million in 2011) to $316 million as at December 31 ($312 million as at December 31, 2011). The allowance is based on a specific percentage deemed appropriate for each account age group and customer standing.

## NOTE 17 Interests in Joint Ventures

The proportionate share of the joint venture items included in the consolidated financial statements is presented in the table below. These joint ventures consist of the interests managed by Hydro-Québec Production and the Groupe – Technologie.

| | 2012 | 2011 |
|---|---|---|
| **Operations** | | |
| Revenue | **143** | 158 |
| Expenditure and financial expenses | **76** | 78 |
| Net result | **67** | 80 |
| **Balance Sheets** | | |
| Current assets | **27** | 24 |
| Long-term assets | **645** | 654 |
| Current liabilities | **14** | 11 |
| Long-term liabilities | **12** | 3 |
| Net assets | **646** | 649 |
| **Cash Flows** | | |
| Operating activities | **82** | 97 |
| Investing activities | **(7)** | (4) |
| Financing activities | **(68)** | (60) |
| Net change in cash and cash equivalents | **7** | 33 |

## NOTE 18 Equity

### SHARE CAPITAL

The authorized share capital consists of 50,000,000 shares with a par value of $100 each, of which 43,741,090 shares were issued and paid up as at December 31, 2012 and 2011.

### RETAINED EARNINGS

Under the *Hydro-Québec Act*, the dividends to be paid by Hydro-Québec are declared once a year by the Québec government, which also determines the terms and conditions of payment. For a given financial year, the dividend cannot exceed the distributable surplus, equal to 75% of the net result. This calculation is based on the consolidated financial statements. However, in respect of a given financial year, no dividend may be declared in an amount that would have the effect of reducing the capitalization rate to less than 25% at the end of the year. All or a portion of the distributable surplus that has not been subject to a dividend declaration may no longer be distributed to the shareholder as a dividend.

For 2012, the dividend is $645 million ($1,958 million for 2011).

### ACCUMULATED OTHER COMPREHENSIVE INCOME

*CASH FLOW HEDGES*

| | 2012 | 2011 |
|---|---|---|
| Balance, beginning of year | (158) | 227 |
| Change for the year | (67) | (385) |
| Balance, end of year | (225) | (158) |

## NOTE 19 Capital Management

Hydro-Québec manages its capital in such a way as to meet its shareholder's expectations, safeguard its funds at all times and sustain its growth. It fosters a management environment allowing it to enhance the long-term value of its assets and equity, ensure its financial sustainability, preserve its financing capability and safeguard its funds and securities.

In addition to equity, capital includes long-term debt, perpetual debt, borrowings and derivative instruments.

Hydro-Québec uses its capitalization rate to monitor its capital structure. It aims to maintain capitalization at no less than 25%.

### CAPITALIZATION

| | 2012 | 2011 |
|---|---|---|
| Equity | 18,982 | 18,834 |
| Long-term debt, including current portion | 43,249 | 41,769 |
| Sinking fund[a] | (594) | (594) |
| Perpetual debt | 275 | 281 |
| Borrowings | 19 | 52 |
| Derivative instruments | 158 | (276) |
| Total | 62,089 | 60,066 |
| Capitalization rate (%)[b] | 30.6 | 31.4 |

a) The sinking fund is reported under Short-term investments.

b) Equity divided by the sum of equity, long-term debt, current portion of long-term debt, perpetual debt, borrowings and derivative instrument liabilities, less derivative instrument assets and sinking fund.

In 2012, Hydro-Québec's capital management objectives were unchanged from 2011.

## NOTE 20 Supplementary Cash Flow Information

| | 2012 | 2011 |
|---|---|---|
| **Change in non-cash working capital items** | | |
| Accounts receivable and other receivables | **(99)** | 62 |
| Materials, fuel and supplies | **25** | 78 |
| Accounts payable and accrued liabilities | **47** | 109 |
| Accrued interest | **(67)** | (79) |
| | **(94)** | 170 |
| **Investing activities not affecting cash** | | |
| Increase in property, plant and equipment and intangible assets | **616** | 239 |
| **Interest paid** | **1,968** | 2,180 |

## NOTE 21 Employee Future Benefits

Hydro-Québec's pension plan (the "Pension Plan") is a fully funded contributory plan that ensures pension benefits based on the number of years of service and an average of the best five years of earnings. These benefits are indexed annually based on a rate which is the greater of the inflation rate, up to a maximum of 2%, and the inflation rate less 3%.

Hydro-Québec also offers other post-retirement benefits as well as post-employment benefits. Post-retirement benefits are provided by group life, medical and hospitalization insurance plans, which are contributory plans with contributions adjusted annually. Post-employment benefits are under non-contributory salary insurance plans, which pay short- and long-term disability benefits. Most of these plans are not funded, with the exception of the long-term disability salary insurance plan, which is fully funded, and the supplementary group life insurance plan, which is partially funded.

All Hydro-Québec's plans are defined benefit plans. The accrued benefit obligations of these plans, valued by independent actuaries, and their assets, at fair value, are valued as at December 31 of each year. The most recent actuarial valuation of the Pension Plan for funding purposes was as at December 31, 2011, at which date the plan was funded at 99.4%. The next valuation must be as at December 31, 2012.

### CHANGES IN ACCRUED BENEFIT OBLIGATIONS AND PLAN ASSETS, AT FAIR VALUE

| | Pension Plan | | Other plans | |
|---|---|---|---|---|
| | 2012 | 2011 | 2012 | 2011 |
| **Accrued benefit obligations** | | | | |
| Balance, beginning of year | **16,903** | 14,984 | **1,061** | 983 |
| Current service cost | **323** | 281 | **43** | 44 |
| Employee contributions | **134** | 124 | **–** | – |
| Benefit payments and refunds | **(756)** | (664) | **(55)** | (53) |
| Interest on obligations | **839** | 823 | **52** | 53 |
| Actuarial loss | **1,730** | 1,355 | **96** | 34 |
| Balance, end of year | **19,173** | 16,903 | **1,197** | 1,061 |
| **Plan assets, at fair value** | | | | |
| Balance, beginning of year | **14,897** | 14,226 | **68** | 70 |
| Actual return on plan assets | **1,489** | 562 | **2** | 2 |
| Employee contributions | **134** | 124 | **–** | – |
| Contributions by Hydro-Québec | **650** | 649 | **10** | 5 |
| Benefit payments and refunds | **(756)** | (664) | **(12)** | (9) |
| Balance, end of year | **16,414** | 14,897 | **68** | 68 |
| **Deficit, end of year** | **(2,759)** | (2,006) | **(1,129)** | (993) |
| Unamortized past service cost | **137** | 185 | **–** | – |
| Unamortized net actuarial loss | **6,155** | 5,013 | **269** | 179 |
| Unamortized transitional (asset) obligation | **(153)** | (305) | **13** | 25 |
| **Accrued benefit assets (liabilities)** | **3,380** | 2,887 | **(847)** | (789) |

## NOTE 21 Employee Future Benefits (continued)

### ADDITIONAL DISCLOSURES WITH RESPECT TO PLAN ASSETS

At year end, plan assets, at fair value, consisted of:

| | Pension Plan | | Other plans | |
|---|---|---|---|---|
| % | 2012 | 2011 | 2012 | 2011 |
| Bonds | 49 | 50 | 96 | 92 |
| Equities | 39 | 37 | – | – |
| Real estate investments | 11 | 9 | – | – |
| Other | 1 | 4 | 4 | 8 |
| | 100 | 100 | 100 | 100 |

Assets of the plans include the following securities issued by Hydro-Québec and by the Québec government and some of its agencies:

| | Pension Plan | | Other plans | |
|---|---|---|---|---|
| | 2012 | 2011 | 2012 | 2011 |
| Bonds | 1,189 | 1,708 | 65 | 62 |

Administrative expenses billed to the Pension Plan by Hydro-Québec amounted to $14 million in 2012 ($12 million in 2011).

### CASH PAYMENTS

Cash payments made by Hydro-Québec for employee benefit plans consist of contributions made to the funded plans and the benefits paid to employees and pensioners under unfunded plans. The cash payment details are as follows:

| | 2012 | 2011 |
|---|---|---|
| Contributions by Hydro-Québec | | |
| Pension Plan | 650 | 649 |
| Other funded plans | 10 | 5 |
| Benefit payments | | |
| Unfunded plans | 44 | 43 |
| | 704 | 697 |

In accordance with the actuarial valuation for funding purposes, Hydro-Québec made current contributions of $256 million in 2012 ($263 million in 2011), including additional contributions of $83 million ($110 million in 2011), to cover the current service cost, and a special contribution of $394 million ($386 million in 2011) to cover part of the unfunded actuarial liability. The special contributions paid in 2012 and 2011 take into account certain temporary relief measures introduced by the *Act to amend the Supplemental Pension Plans Act and other legislative provisions in order to reduce the effects of the financial crisis on plans covered by the Act* and, in particular, the extension of the period to cover the unfunded actuarial liability.

### ELEMENTS OF ACCRUED BENEFIT COST RECOGNIZED FOR THE YEAR

| | Pension Plan | | Other plans | |
|---|---|---|---|---|
| | 2012 | 2011 | 2012 | 2011 |
| Current service cost[a] | 323 | 281 | 43 | 44 |
| Interest on obligations | 839 | 823 | 52 | 53 |
| Actual return on plan assets | (1,489) | (562) | (2) | (2) |
| Actuarial loss | 1,730 | 1,355 | 96 | 34 |
| Cost before adjustments required to recognize the long-term nature of employee future benefits | 1,403 | 1,897 | 189 | 129 |
| Difference between actual and expected return on assets | 406 | (403) | – | (1) |
| Difference between actuarial loss on accrued benefit obligations and actuarial loss recognized | (1,548) | (1,269) | (90) | (28) |
| Amortization of past service cost | 48 | 50 | – | – |
| Amortization of transitional (asset) obligation | (152) | (152) | 12 | 13 |
| | (1,246) | (1,774) | (78) | (16) |
| **Cost recognized for the year** | 157 | 123 | 111 | 113 |

a) For the long-term disability salary insurance plan, the current service cost corresponds to the cost of new disability cases for the year.

### SIGNIFICANT ACTUARIAL ASSUMPTIONS

The following actuarial assumptions, used to determine the accrued benefit obligations and cost recognized for the plans, result from a weighted average:

| | Pension Plan | | Other plans | |
|---|---|---|---|---|
| % | **2012** | 2011 | **2012** | 2011 |
| **Accrued benefit obligations** | | | | |
| Rate at end of year | | | | |
| Discount rate | **4.36** | 5.01 | **4.36** | 5.01 |
| Salary escalation rate[a] | **2.25** | 2.61 | **–** | – |
| **Accrued benefit cost recognized** | | | | |
| Rate at end of prior year | | | | |
| Discount rate | **5.01** | 5.54 | **5.01** | 5.54 |
| Expected long-term rate of return on plan assets | **6.75** | 6.75 | **4.03** | 4.45 |
| Salary escalation rate[a] | **2.61** | 2.60 | **–** | – |

a) This rate takes salary increases into account as well as promotion opportunities while in service.

As at December 31, 2012, health care costs were based on an annual growth rate of 5.5% for 2013. According to the assumption used, this rate will then decrease to a final rate of 4.8% in 2030. A change of 1% in this annual growth rate would have had the following impact for 2012:

| | 1% increase | 1% decrease |
|---|---|---|
| Impact on current service cost and interest cost on accrued benefit obligations for the year | 8 | (6) |
| Impact on accrued benefit obligations at end of year | 94 | (72) |

## NOTE 22 Commitments and Contingencies

### ELECTRICITY PURCHASE TRANSACTIONS

On May 12, 1969, Hydro-Québec signed a contract with Churchill Falls (Labrador) Corporation Limited (CF(L)Co) whereby Hydro-Québec undertook to purchase substantially all the output from Churchill Falls generating station, which has a rated capacity of 5,428 MW. Expiring in 2016, this contract will be automatically renewed for a further 25 years under agreed-upon terms and conditions. On June 18, 1999, Hydro-Québec and CF(L)Co entered into a contract to guarantee the availability of 682 MW of additional power until 2041 for the November 1 to March 31 winter period.

As at December 31, 2012, Hydro-Québec was committed under 134 contracts, with terms extending through 2052, to purchase electricity from other power producers. These contracts represent an installed capacity of about 5,741 MW, and the majority of them include renewal clauses. Hydro-Québec has also undertaken to purchase power transmission rights.

Hydro-Québec expects to make the following payments on all its electricity purchase contracts over the coming years:

| | |
|---|---|
| 2013 | 1,182 |
| 2014 | 1,457 |
| 2015 | 1,656 |
| 2016 | 1,760 |
| 2017 | 1,772 |
| 2018 and thereafter | 33,008 |

### GUARANTEES

In accordance with the terms and conditions of certain debt securities issued outside Canada, Hydro-Québec has undertaken to increase the amount of interest paid to non-residents in the event of changes to Canadian tax legislation governing the taxation of non-residents' income. Hydro-Québec cannot estimate the maximum amount it might have to pay under such circumstances. Should an amount become payable, Hydro-Québec has the option of redeeming most of the securities in question. As at December 31, 2012, the amortized cost of the long-term debts concerned was $5,427 million.

### INVESTMENTS

Hydro-Québec anticipates investing approximately $4.9 billion in property, plant and equipment and intangible assets in 2013.

In addition, Hydro-Québec has entered into various agreements with the local communities concerned by certain capital projects. The amounts related to some of these agreements are not recorded under Long-term debt because, as at December 31, 2012, the agreements concerned did not meet all the applicable criteria for the recognition of a liability. These agreements provide for annual payments as of 2021, for a maximum term of 51 years and a total amount of $618 million.

### LITIGATION

In the normal course of its development and operating activities, Hydro-Québec is sometimes party to claims and legal proceedings. Management is of the opinion that an adequate provision has been made for these legal actions. Consequently, it does not foresee any adverse effect of such contingent liabilities on Hydro-Québec's consolidated operating results or financial position.

## NOTE 22 Commitments and Contingencies (continued)

Among other ongoing actions, some local communities have instituted proceedings against the governments of Canada and Québec, as well as against Hydro-Québec, based on demands concerning their ancestral rights. Thus, the Innus of Uashat mak Mani-Utenam are claiming $1.5 billion. In June 2009, they served notice that they had filed for an injunction to suspend work at the Romaine complex jobsite, and in May 2010, an application was added for an interlocutory injunction to suspend work on the related tie lines. As well, in November 2006, the Innus of Pessamit reactivated a case instituted in 1998 aimed at obtaining, among other things, the recognition of ancestral rights related to Québec lands on which certain hydroelectric generating facilities belonging to the Manic-Outardes complex are located. The Innus of Pessamit are claiming $500 million. The judicial proceedings are progressing, and Hydro-Québec is challenging the legitimacy of all these claims.

## NOTE 23 Segmented Information

Hydro-Québec carries on its activities in the four reportable business segments defined below. The non-reportable business segments and other activities are grouped together under Corporate and Other Activities for reporting purposes.

**Generation:** Hydro-Québec Production operates and develops Hydro-Québec's generating facilities. This division also sells electricity on external markets and engages in energy trading. Hydro-Québec Production provides Hydro-Québec Distribution with a base volume of up to 165 TWh of heritage pool electricity annually at an average price of 2.79¢/kWh. In excess of this volume, it can participate in Hydro-Québec Distribution's calls for tenders in a context of free market competition.

**Transmission:** Hydro-Québec TransÉnergie operates and develops Hydro-Québec's power transmission system. It markets system capacity and manages power flows throughout Québec.

**Distribution:** Hydro-Québec Distribution operates and develops Hydro-Québec's distribution system and is responsible for sales and services to Québec customers. It also promotes energy efficiency and ensures the security of the supply of electricity to the Québec market.

**Construction:** Hydro-Québec Équipement et services partagés and Société d'énergie de la Baie James (SEBJ) design, build and refurbish generating and transmission facilities. Hydro-Québec Équipement et services partagés is responsible for projects throughout Québec, except in the territory governed by the *James Bay and Northern Québec Agreement* (JBNQA). SEBJ builds generating facilities in the territory governed by the JBNQA (north of the 49th parallel) and may carry out certain projects outside Québec.

**Corporate and Other Activities:** The corporate units support the divisions in the achievement of their business objectives. They include the Groupe – Technologie, Groupe – Affaires corporatives et secrétariat général, Vice-présidence – Comptabilité et contrôle, Vice-présidence – Financement, trésorerie et caisse de retraite and Vice-présidence – Ressources humaines, as well as the Direction principale – Centre de services partagés, which reports to Hydro-Québec Équipement et services partagés. The Centre de services partagés brings together internal company-wide shared services, including procurement of goods and services, real estate management, document management, materials management and transportation, food and accommodation services.

The amounts presented for each segment are based on the financial information used to prepare the consolidated financial statements. The accounting policies used to calculate these amounts are as described in Note 1, Significant Accounting Policies, and Note 2, Effects of Rate Regulation on the Consolidated Financial Statements.

Intersegment transactions related to electricity sales are recorded based on the supply and transmission rates provided for by the *Act respecting the Régie de l'énergie*. The Act sets a commodity rate for an annual base volume of up to 165 TWh of heritage pool electricity for the Québec market.

Other intersegment products and services are measured at full cost, which includes all costs directly associated with product or service delivery.

Most of Hydro-Québec's revenue is from Québec, and substantially all its property, plant and equipment are related to its Québec operations. In 2012, revenue from outside Québec amounted to $1,558 million, with $1,138 million originating from the United States ($1,536 million and $1,172 million, respectively, in 2011).

The following tables contain information related to operations, assets and investing activities by segment:

| | 2012 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Generation | Transmission | Distribution | Construction | Corporate and Other Activities | Intersegment eliminations and adjustments | Total |
| Revenue | | | | | | | |
| External customers | 1,416 | 110 | 10,654 | – | 40 | 8[a] | **12,228** |
| Intersegment customers | 4,725 | 2,995 | 77 | 2,295 | 1,410 | (11,502) | **–** |
| Depreciation and amortization | 731 | 917 | 679 | 4 | 84 | – | **2,415** |
| Financial expenses | 1,177 | 796 | 444 | – | 29 | (5) | **2,441** |
| Result from continuing operations | 1,541 | 581 | 503 | – | 111 | – | **2,736** |
| Result from discontinued operations | (1,867) | (9) | – | – | – | – | **(1,876)** |
| Net result | (326) | 572 | 503 | – | 111 | – | **860** |
| Total assets | 31,066 | 19,144 | 13,434 | 421 | 6,648 | (196) | **70,517** |
| Investing activities | | | | | | | |
| Increase in property, plant and equipment and intangible assets | | | | | | | |
| Affecting cash | 1,511 | 1,423 | 874 | 4 | 120 | – | **3,932** |
| Not affecting cash | 587 | 20 | 9 | – | – | – | **616** |

| | 2011 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Generation | Transmission | Distribution | Construction | Corporate and Other Activities | Intersegment eliminations and adjustments | Total |
| Revenue | | | | | | | |
| External customers | 1,409 | 98 | 10,676 | – | 59 | 3[a] | 12,245 |
| Intersegment customers | 4,940 | 2,991 | 75 | 2,122 | 1,400 | (11,528) | – |
| Depreciation and amortization | 806 | 969 | 751 | 4 | 76 | (3) | 2,603 |
| Financial expenses | 1,132 | 859 | 511 | – | 30 | (4) | 2,528 |
| Result from continuing operations | 1,765 | 429 | 374 | – | 115 | 3 | 2,686 |
| Result from discontinued operations | (75) | – | – | – | – | – | (75) |
| Net result | 1,690 | 429 | 374 | – | 115 | 3 | 2,611 |
| Total assets | 31,661 | 18,509 | 12,983 | 398 | 6,317 | (231) | 69,637 |
| Investing activities | | | | | | | |
| Increase in property, plant and equipment and intangible assets | | | | | | | |
| Affecting cash | 1,467 | 1,292 | 950 | 5 | 100 | – | 3,814 |
| Not affecting cash | 208 | 21 | 10 | – | – | – | 239 |

a) Resales of excess supply by Hydro-Québec Distribution on outside markets are presented as offsets of electricity purchases rather than in Revenue.

## NOTE 24 Comparative Information

Some of the prior year's data have been reclassified to conform to the presentation adopted in the current year.

# FIVE-YEAR REVIEW

## CONSOLIDATED FINANCIAL INFORMATION

| $M | 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| **OPERATIONS** | | | | | |
| **Revenue** | **12,228** | 12,245 | 12,269 | 11,997 | 12,304 |
| **Expenditure** | | | | | |
| Operations | **2,356** | 2,410 | 2,424 | 2,376 | 2,343 |
| Electricity and fuel purchases | **1,283** | 1,154 | 1,282 | 1,137 | 1,344 |
| Depreciation and amortization | **2,415** | 2,603 | 2,559 | 2,280 | 2,246 |
| Taxes | **997** | 864 | 906 | 924 | 1,088 |
| | **7,051** | 7,031 | 7,171 | 6,717 | 7,021 |
| **Operating result** | **5,177** | 5,214 | 5,098 | 5,280 | 5,283 |
| Financial expenses | **2,441** | 2,528 | 2,555 | 2,419 | 2,456 |
| Result from continuing operations | **2,736** | 2,686 | 2,543 | 2,861 | 2,827 |
| Result from discontinued operations[a] | **(1,876)** | (75) | (28) | 10 | 188 |
| **Net result** | **860** | 2,611 | 2,515 | 2,871 | 3,015 |
| **DIVIDEND** | **645** | 1,958 | 1,886 | 2,168 | 2,252 |
| **BALANCE SHEET SUMMARY** | | | | | |
| Total assets | **70,517** | 69,637 | 65,809 | 64,918 | 62,850 |
| Long-term debt, including current portion and perpetual debt | **43,524** | 42,050 | 38,660 | 37,943 | 36,415 |
| Equity | **18,982** | 18,834 | 18,566 | 18,419 | 18,250 |
| **INVESTMENTS FOR CONTINUING OPERATIONS AFFECTING CASH** | | | | | |
| Property, plant and equipment and intangible assets[b] | **3,932** | 3,814 | 4,220 | 4,307 | 3,954 |
| **FINANCIAL RATIOS** | | | | | |
| Interest coverage[c] | **2.03** | 2.00 | 1.92 | 2.10 | 2.04 |
| Return on equity from continuing operations (%)[d] | **14.6** | 15.5 | 15.3 | 17.9 | 18.5 |
| Profit margin from continuing operations (%)[e] | **22.4** | 21.9 | 20.7 | 23.8 | 23.0 |
| Capitalization (%)[f] | **30.6** | 31.4 | 32.1 | 32.6 | 33.4 |
| Self-financing (%)[g] | **54.5** | 49.0 | 47.0 | 41.3 | 45.7 |

a) The discontinued operations are essentially related to the 2012 decision to abandon the project to refurbish Gentilly-2 nuclear generating station. The 2008 result also includes $129 million for the price adjustment provided for in the contract regarding the sale of Hydro-Québec's interest in HQI Transelec Chile S.A.

b) Including the Energy Efficiency Plan.

c) Sum of operating result and net investment income divided by gross interest expense.

d) Result from continuing operations divided by average equity less average result from discontinued operations for the current year and prior years and average accumulated other comprehensive income. For the period from 2008 to 2012, average equity less average result from discontinued operations for the current year and prior years and average accumulated other comprehensive income amounted to $15,318 million, $15,952 million, $16,627 million, $17,319 million and $18,729 million, respectively.

e) Result from continuing operations divided by revenue.

f) Equity divided by the sum of equity, long-term debt, current portion of long-term debt, perpetual debt, borrowings and derivative instrument liabilities, less derivative instrument assets and sinking fund.

g) Cash flows from operating activities less dividend paid, divided by the sum of cash flows from investing activities, excluding net disposal or acquisition of short-term investments, and repayment of long-term debt.

Note: Throughout the Five-Year Review and the Consolidated Results by Quarter, certain comparative figures have been reclassified to conform to the presentation adopted in the current year.

## OPERATING STATISTICS

| | 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| GWh | | | | | |
| **Electricity sales** | | | | | |
| In Québec, by category | | | | | |
| Residential and farm | **62,329** | 62,748 | 59,534 | 62,484 | 60,747 |
| Commercial and institutional | **33,983** | 33,569 | 33,865 | 34,151 | 35,228 |
| Industrial | **65,916** | 67,621 | 68,439 | 63,310 | 69,144 |
| Other | **6,173** | 6,028 | 7,647 | 5,371 | 5,278 |
| | **168,401** | 169,966 | 169,485 | 165,316 | 170,397 |
| Outside Québec | | | | | |
| Canada/U.S. (long-term) | **2,683** | 2,617 | 2,677 | 2,604 | 2,516 |
| Canada/U.S. (short-term) | **32,615** | 24,146 | 20,593 | 20,753 | 18,783 |
| | **35,298** | 26,763 | 23,270 | 23,357 | 21,299 |
| Total electricity sales | **203,699** | 196,729 | 192,755 | 188,673 | 191,696 |
| $M | | | | | |
| **Revenue from electricity sales** | | | | | |
| In Québec, by category | | | | | |
| Residential and farm | **4,481** | 4,536 | 4,302 | 4,500 | 4,300 |
| Commercial and institutional | **2,624** | 2,599 | 2,648 | 2,662 | 2,687 |
| Industrial | **3,010** | 3,262 | 3,185 | 3,092 | 3,174 |
| Other | **327** | 323 | 371 | 295 | 284 |
| | **10,442** | 10,720 | 10,506 | 10,549 | 10,445 |
| Outside Québec | | | | | |
| Canada/U.S. (long-term) | **211** | 254 | 247 | 256 | 220 |
| Canada/U.S. (short-term) | **1,223** | 1,145 | 1,266 | 1,250 | 1,699 |
| | **1,434** | 1,399 | 1,513 | 1,506 | 1,919 |
| Total revenue from electricity sales | **11,876** | 12,119 | 12,019 | 12,055 | 12,364 |
| As at December 31 | | | | | |
| **Number of customer accounts** | | | | | |
| In Québec, by category | | | | | |
| Residential and farm | **3,792,170** | 3,746,397 | 3,698,169 | 3,649,470 | 3,603,330 |
| Commercial and institutional | **293,473** | 291,212 | 300,163 | 297,380 | 296,504 |
| Industrial | **17,784** | 18,573 | 9,589 | 9,829 | 10,111 |
| Other | **3,999** | 4,013 | 3,868 | 3,653 | 3,499 |
| Total customer accounts | **4,107,426** | 4,060,195 | 4,011,789 | 3,960,332 | 3,913,444 |
| kWh/customer account | | | | | |
| **Average annual consumption** | | | | | |
| In Québec, by category | | | | | |
| Residential and farm | **16,536** | 16,857 | 16,205 | 17,230 | 16,974 |
| Commercial and institutional | **116,244** | 113,529 | 113,347 | 115,009 | 118,209 |
| Industrial | **3,626,042** | 4,802,287 | 7,049,027 | 6,350,050 | 6,379,775 |
| Other | **1,540,939** | 1,529,755 | 2,033,506 | 1,501,957 | 1,521,257 |

## OPERATING STATISTICS (CONTINUED)

| | 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| MW | | | | | |
| **Installed capacity**[a] | | | | | |
| Hydroelectric | **35,125** | 35,285 | 34,490 | 34,499 | 34,118 |
| Nuclear[b] | **–** | 675 | 675 | 675 | 675 |
| Thermal | **704** | 1,011 | 1,506 | 1,637 | 1,637 |
| Wind farm | **–** | – | – | 2 | 2 |
| Total installed capacity | **35,829** | 36,971 | 36,671 | 36,813 | 36,432 |
| GWh | | | | | |
| **Total energy requirements**[c] | **221,004** | 214,764 | 209,108 | 208,524 | 211,228 |
| MW | | | | | |
| **Peak power demand in Québec**[d] | **38,797** | 35,481 | 37,717 | 34,659 | 37,230 |
| km | | | | | |
| **Lines (overhead and underground)** | | | | | |
| Transmission | **33,911**[e] | 33,630 | 33,453 | 33,244 | 33,058 |
| Distribution[f] | **114,649** | 113,525 | 112,089 | 111,205 | 110,127 |
| | **148,560** | 147,155 | 145,542 | 144,449 | 143,185 |

a) In addition to the generating capacity of its own facilities, Hydro-Québec has access to almost all the output from Churchill Falls generating station (5,428 MW) under a contract with Churchill Falls (Labrador) Corporation Limited that will remain in effect until 2041. It also purchases all the output from 15 wind farms (1,349 MW) and 3 small hydropower plants (23 MW) and almost all the output from 7 biomass cogeneration facilities (114 MW) operated by independent power producers. Moreover, 1,149 MW are available under long-term contracts with other suppliers.

b) Gentilly-2 generating station ceased to operate on December 28, 2012.

c) Total energy requirements consist of kilowatthours delivered within Québec and to neighboring systems.

d) The 2012 figure was valid on February 22, 2013. The values indicated correspond to the needs for the winter beginning in December, including interruptible power. The peak for a given period is based on measurements at fixed intervals. The 2012–2013 winter peak was 38,797 MW and occurred on January 23, 2013, at 6:00 p.m., after the system load momentarily reached 39,120 MW at 5:36 p.m.

e) 33,639 km of lines operated by Hydro-Québec TransÉnergie and 272 km by Hydro-Québec Distribution.

f) These figures include off-grid systems but exclude private systems, lines under construction and 44-kV lines (transmission).

## OTHER INFORMATION

| | 2012 | 2011 | 2010 | 2009 | 2008 |
|---|---|---|---|---|---|
| % | | | | | |
| **Average rate (decrease) increase from January 1 to December 31** | **(0.4)** | (0.2) | 0.6 | 1.6 | 2.7 |
| As at December 31 | | | | | |
| **Number of employees**[a] | | | | | |
| Permanent | **18,926** | 19,415 | 19,521 | 19,536 | 19,297 |
| Temporary | **2,670** | 3,086 | 3,571 | 3,554 | 3,619 |
| Total | **21,596** | 22,501 | 23,092 | 23,090 | 22,916 |
| Women (%) | **30.6** | 31.1 | 30.9 | 30.6 | 30.9 |

a) Excluding employees of subsidiaries and joint ventures.

# CONSOLIDATED RESULTS BY QUARTER

| | 2012 | | | | |
|---|---|---|---|---|---|
| | 1st quarter | 2nd quarter | 3rd quarter | 4th quarter | 12-month period |
| $M | | | | (unaudited) | (audited) |
| **Revenue** | 3,735 | 2,652 | 2,619 | 3,222 | **12,228** |
| **Expenditure** | | | | | |
| Operations | 586 | 582 | 534 | 654 | **2,356** |
| Electricity and fuel purchases | 331 | 275 | 295 | 382 | **1,283** |
| Depreciation and amortization | 596 | 568 | 576 | 675 | **2,415** |
| Taxes | 269 | 227 | 217 | 284 | **997** |
| | 1,782 | 1,652 | 1,622 | 1,995 | **7,051** |
| **Operating result** | 1,953 | 1,000 | 997 | 1,227 | **5,177** |
| Financial expenses | 610 | 598 | 621 | 612 | **2,441** |
| **Result from continuing operations** | 1,343 | 402 | 376 | 615 | **2,736** |
| **Discontinued operations** | | | | | |
| Operating result | (7) | (16) | (28) | (8) | **(59)** |
| Write-off of property, plant and equipment under construction | – | – | (978) | (12) | **(990)** |
| Impairment of nuclear generating station assets | – | – | (827) | – | **(827)** |
| **Result from discontinued operations** | (7) | (16) | (1,833) | (20) | **(1,876)** |
| **Net result** | 1,336 | 386 | (1,457) | 595 | **860** |

| | 2011 | | | | |
|---|---|---|---|---|---|
| | 1st quarter | 2nd quarter | 3rd quarter | 4th quarter | 12-month period |
| $M | | | | (unaudited) | (audited) |
| **Revenue** | 3,758 | 2,763 | 2,611 | 3,113 | 12,245 |
| **Expenditure** | | | | | |
| Operations | 560 | 582 | 530 | 738 | 2,410 |
| Electricity and fuel purchases | 315 | 271 | 267 | 301 | 1,154 |
| Depreciation and amortization | 601 | 618 | 593 | 791 | 2,603 |
| Taxes | 253 | 201 | 202 | 208 | 864 |
| | 1,729 | 1,672 | 1,592 | 2,038 | 7,031 |
| **Operating result** | 2,029 | 1,091 | 1,019 | 1,075 | 5,214 |
| Financial expenses | 627 | 626 | 615 | 660 | 2,528 |
| Result from continuing operations | 1,402 | 465 | 404 | 415 | 2,686 |
| Result from discontinued operations | – | (13) | (21) | (41) | (75) |
| **Net result** | 1,402 | 452 | 383 | 374 | 2,611 |

# CORPORATE MANAGEMENT

**Thierry Vandal**
President and Chief Executive Officer

**Marie-José Nadeau**
Executive Vice President – Corporate Affairs and Secretary General

**Élie Saheb**
Executive Vice President – Technology

**Jean-Hugues Lafleur**
Vice President – Financing, Treasury and Pension Fund

**Lise Croteau**
Vice President – Accounting and Control

**Bruno Gingras**
Vice President – Human Resources

# BOARD OF DIRECTORS

**Michael L. Turcotte**
Chairman of the Board, Hydro-Québec
*Appointment: November 17, 2005*
*Term: November 30, 2016*
*Status: Independent director*

Michael L. Turcotte holds a Bachelor of Arts degree from the University of Montréal and a Master's degree from Laval University School of Business. He enjoyed a lengthy career with the Royal Bank of Canada where he held various senior positions. He was Chairman of the Board of Management of the Canada Customs and Revenue Agency from 1999 to 2004. He has also served on the boards of various organizations in the private and public sectors.

**Thierry Vandal**
President and Chief Executive Officer, Hydro-Québec
*Appointment: April 6, 2005*
*Term: October 3, 2017*
*Status: Non-independent director*

With a Bachelor of Engineering from the École Polytechnique de Montréal and an MBA from HEC Montréal, Thierry Vandal has worked in the energy sector for some 30 years. In particular, he participated in the operations, marketing and strategic planning aspects of the petroleum, petrochemical and natural gas industries before joining Hydro-Québec in 1996. Mr. Vandal is Chairman of the Board of BioFuelNet Canada and also sits on the boards of HEC Montréal and McGill University.

**Gaston Blackburn**
President, G. Blackburn Inc.
*Appointment: September 10, 2003*
*Term: February 11, 2012[1]*
*Status: Independent director*

A merchant and businessman, Gaston Blackburn was elected MNA for Roberval in 1988. He was successively Parliamentary Secretary to the Premier, Minister for the Environment and Minister of Recreation, Fish and Game. A member of the Ordre des administrateurs agréés du Québec and with certification from the Collège des administrateurs de sociétés, he has served on the boards of companies in various sectors, including the food industry and natural resources. He currently sits on the board of the Institut des régions ressources.

**Anik Brochu**
Director, Human Resources, Groupe T.A.P. inc.
*Appointment: September 13, 2006*
*Term: November 30, 2015*
*Status: Independent director*

A graduate of the University of Ottawa in Law and member of the Barreau du Québec, Anik Brochu was General Manager of the Chambre de commerce de Val-d'Or from 1997 to 2008 and a lawyer with Cain Lamarre Casgrain Wells from 2008 to 2010. She continues to provide consulting services to that firm. In 2011, she joined Groupe T.A.P. as Director of Human Resources. Ms. Brochu sits on the board of the Université du Québec en Abitibi-Témiscamingue and on various committees that are active in the field of socioeconomic development.

**Carl Cassista**
President, Axion Technologies Ltd.
*Appointment: September 26, 2007*
*Term: November 30, 2014*
*Status: Independent director*

A graduate of Université Laval and member of the Ordre des ingénieurs du Québec, Carl Cassista has worked in electrical engineering with Axion Technologies Ltd. since 1982. He has served as president of Axion since 1994 and piloted the company's expansion in North America and Europe. Mr. Cassista has also sat on the boards of numerous economic development organizations.

**Michelle Cormier**
Vice-President and Chief Financial Officer, TNG Corporation
*Appointment: November 4, 2009*
*Term: November 4, 2013*
*Status: Independent director*

With a Bachelor's degree in Administration from Bishop's University and a Graduate Diploma in Public Accountancy from McGill University, Michelle Cormier is a member of the Ordre des comptables professionnels agréés du Québec and has certification from the Collège des administrateurs de sociétés. She held executive positions with Alcan Aluminium and Repap Enterprises before her appointment as Vice-President and Chief Financial Officer of TNG Corporation in 2001. Ms. Cormier chairs the boards of Société immobilière du Québec, Pro-Fab, the Orchestre Métropolitain and Industries Moreau.

**Patrick Déry**
Superintendent of Solvency, Autorité des marchés financiers
*Appointment: October 10, 2012*
*Term: November 3, 2013*
*Status: Non-independent director*

With a Bachelor's degree and a Master's degree in Economics from Université Laval, Patrick Déry joined the Québec civil service in 1999. He held various positions in the Ministère des Finances, including Assistant Deputy Minister responsible for federal-provincial and financial policies. After performing the duties of Superintendent of Customer Assistance and Distribution Regulation at the Autorité des marchés financiers, he was Deputy Minister of Natural Resources from September to December 2012.

**Suzanne Gouin**
President and Chief Executive Officer, TV5 Québec Canada
*Appointment: September 26, 2007*
*Term: November 30, 2015*
*Status: Independent director*

Suzanne Gouin has a Bachelor's degree in Political Science from Concordia University, where she also took graduate courses in media studies. She completed an MBA at the University of Western Ontario and has certification from the Institute of Corporate Directors. She has held several management positions in media companies and joined TV5 Québec Canada in 2002 as President and Chief Executive Officer. Ms. Gouin sits on the boards of St. Mary's Hospital Center and various not-for-profit organizations.

1. When their term expires, directors remain in office until replaced or reappointed.

**Isabelle Hudon**
President, Sun Life Financial, Québec

*Appointment: November 30, 2011*
*Term: November 30, 2015*
*Status: Independent director*

Following her studies in economics and business administration, Isabelle Hudon began her career in communications before her appointment as President and Chief Executive Officer of the Board of Trade of Metropolitan Montreal, a position she held from 2004 to 2008. From 2008 to 2010, she was President of Marketel/McCann Ericlson. In 2010, she joined Sun Life Financial as President of the company's Québec operations. Ms. Hudon sits on the boards of Aéroports de Montréal, Turquoise Hill Resources and Holt Renfrew.

**Louis Lagassé**
Chairman of the Board, Lagassé Group

*Appointment: September 10, 2003*
*Term: February 11, 2012[1]*
*Status: Independent director*

With a law degree from the Université de Montréal, an MBA from the University of Western Ontario and a Ph.D. in Civil Law from Bishop's University, Louis Lagassé is a member of the Chambre des notaires du Québec, which awarded him an honorary medal in 2011. He also holds an honorary doctorate from the Université de Sherbrooke and is a member of the Order of Canada. Mr. Lagassé heads an industrial group that is active on the Canadian and European markets, and he serves on the boards of several telecommunications companies as well as various not-for-profit organizations.

**Jacques Leblanc**
President, Gestion Jacques Leblanc inc.

*Appointment: April 7, 2004*
*Term: November 30, 2014*
*Status: Independent director*

A graduate of Université Laval in administration, Jacques Leblanc is a chartered accountant and a Fellow of the Ordre des comptables professionnels agréés du Québec. He also has certification from the Collège des administrateurs de sociétés. Mr. Leblanc was a partner in the firm Leblanc Bourque Arsenault for 25 years. Currently, he sits on the board of the Canada Employment Insurance Financing Board.

**Michel Plessis-Bélair**
Vice-Chairman, Power Corporation of Canada

*Appointment: April 7, 2004*
*Term: September 26, 2011[1]*
*Status: Independent director*

Michel Plessis-Bélair holds a Bachelor of Arts from the Université de Montréal, a business and accounting degree from HEC Montréal and an MBA from Columbia University in New York. In 1986, he joined Power Corporation of Canada. From 1986 to 2008, he successively served as Senior Vice-President, Finance and Administration, as Executive Vice-President and Chief Financial Officer and as Vice-Chairman and Chief Financial Officer. Currently, he is Vice-Chairman of Power Corporation and Power Financial Corporation and a director of several of their subsidiaries. He also sits on the boards of various not-for-profit organizations.

**Marie-France Poulin**
Executive Vice-President, Canada Group Inc.

*Appointment: April 7, 2004*
*Term: November 30, 2015*
*Status: Independent director*

Marie-France Poulin holds a Bachelor of Business Administration with an option in Marketing from Université Laval, as well as certification from the Collège des administrateurs de sociétés. Prior to joining Canada Group in 2004, she held several executive positions, including that of Vice President, Sales and Marketing, of MAAX. Ms. Poulin is a director of the Laurentian Bank and also sits on the boards of various not-for-profit organizations.

**Martine Rioux**
Corporate Secretary,
Université du Québec en Abitibi-Témiscamingue

*Appointment: November 30, 2011*
*Term: November 30, 2014*
*Status: Independent director*

Martine Rioux holds a Bachelor of Arts in Psychology from the Université de Sherbrooke and a Certificate in Administration from the Université du Québec en Abitibi-Témiscamingue. She worked as a development officer before becoming General Manager of the Conférence régionale des élus de l'Abitibi-Témiscamingue. In 2011, she was appointed Corporate Secretary of the Université du Québec en Abitibi-Témiscamingue.

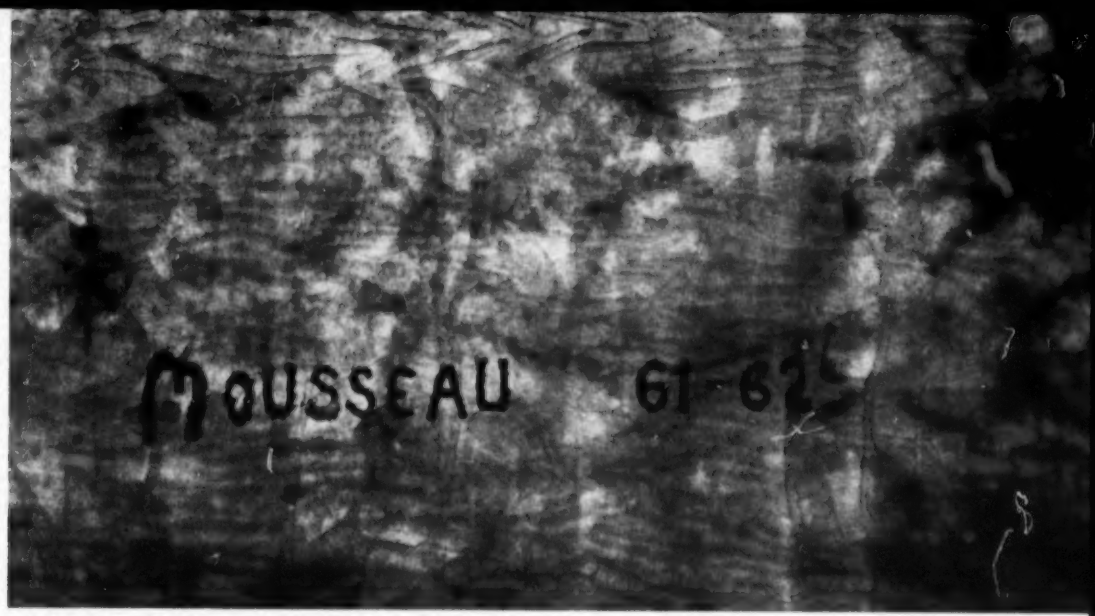
**Marie-Anne Tawil**
President and Chief Executive Officer,
Iron Hill Investments Inc.

*Appointment: December 7, 2005*
*Term: November 30, 2015*
*Status: Independent director*

With a Licentiate in Civil Law and a Bachelor of Common Law from the University of Ottawa and an MBA from Concordia University, Marie-Anne Tawil has earned certification from the Institute of Corporate Directors and is a member of the Barreau du Québec. She has practised law with two major law firms in Montréal and was Legal Counsel and Secretary of Quebecor. She has been President and Chief Executive Officer of Iron Hill Investments since 2000. Ms. Tawil is Chair of the Société de l'assurance automobile du Québec and a member of the Governance Committee of ONE DROP.

1. When their term expires, directors remain in office until replaced or reappointed.

# ACTIVITY REPORT OF THE BOARD OF DIRECTORS AND BOARD COMMITTEES




October 10, 2012, was the 50th anniversary of the unveiling of Jean-Paul Mousseau's luminous mural, *Lumière et mouvement dans la couleur*, which adorns Hydro-Québec's head office lobby in Montréal.

## BOARD OF DIRECTORS

Hydro-Québec's Board of Directors is made up of the Chairman of the Board, the President and Chief Executive Officer, and directors whose diverse professional backgrounds are a definite asset for the seven Board committees: Executive, Governance and Ethics, Audit, Human Resources, Environment and Public Affairs, Finance, and Pension Plan Financial Management. The Board is chaired by Michael Turcotte.

**Mandate:** The Board administers the company's business efficiently, in accordance with the *Hydro-Québec Act*, the *Companies Act* and the applicable regulations. Its principal functions include reviewing and approving the Strategic Plan and the annual Business Plan, setting the company's annual performance targets, reviewing financial results on a monthly basis, and performing the cyclical review of integrated business risk management. The Board also approves the appointment of executives other than the President and Chief Executive Officer, as well as the policies governing compensation and working conditions for Hydro-Québec's employees and executives. In addition, it approves the company's major capital projects in generation, transmission and distribution, as well as important matters submitted to the Régie de l'énergie.

**Activities:** The Board met 11 times in 2012, while its committees held 33 meetings in all. The Board approved many capital projects in generation, transmission and distribution, including projects to increase the capacity of the 315-kV ties in the transmission system in Abitibi, construction of a double-circuit 230-kV transmission line between Saint-Césaire and Bedford substations, and replacement of current transformers on the 735-kV transmission grid. It also read the report on the future of Gentilly-2 generating station and confirmed the abandonment of the refurbishment project. The Board authorized Hydro-Québec to reach an agreement with the Grand Council of the Crees concerning the resumption of land use in the area affected by the Eastmain-1-A/Sarcelle/Rupert project. It also approved the updating of the codes of ethics and rules of professional conduct applicable to directors, executives and controllers of Hydro-Québec and its wholly owned subsidiaries, and the adoption of a policy on governance, planning and management of projects and activities related to information technologies. The Directors also benefited from a number of presentations on topics such as management of runoff risks, the goods and services procurement process, the capital project planning cycle, customer experience and progress made at the Romaine jobsite. They were also made aware of the company's governance framework with respect to the environment and their responsibilities in that regard.

In the course of its recurring deliberations, the Board examined the company's objectives and approved its quarterly and annual financial results, as well as the financial statements of the Hydro-Québec pension plan. It reviewed the progress of the company's main capital projects and examined the consolidated residual risk portfolio. The Board also reviewed the information and communication technologies security program. Finally, it approved the internal audit plan and the independent auditors' plan and fees in connection with the audit of the financial statements of the company and of its pension plan.

### EXECUTIVE (A)

**Mandate:** The Executive Committee is vested with all of the powers of the Board of Directors, except those powers that are expressly reserved for the Board by law and under the company's bylaws. It is chaired by Michael Turcotte.

**Activities:** The Executive Committee did not hold any meetings in 2012.

## DIRECTOR ATTENDANCE AT MEETINGS OF THE BOARD OF DIRECTORS AND BOARD COMMITTEES IN 2012

| DIRECTORS | Notes | Board | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| | **Number of meetings** | **11** | | **4** | **8** | **5** | **7** | **4** | **5** |
| **Michael L. Turcotte** A B C D E F G | | 11 | | 4 | 8 | 4 | 6 | 3 | 5 |
| **Thierry Vandal** A E F G | 1 | 11 | | | | | 5 | 4 | 4 |
| **Gaston Blackburn** E | | 10 | | | | | 7 | | |
| **Anik Brochu** E | | 6 | | | | | 7 | | |
| **Carl Cassista** D | | 10 | | | | 5 | | | |
| **Michelle Cormier** C | | 10 | | | 8 | | | | |
| **Patrick Déry** | 2 | 3 | | | | | | | |
| **Suzanne Gouin** D E | | 9 | | | | 4 | 5 | | |
| **Isabelle Hudon** E | 3 | 8 | | | | | 1 | | |
| **Louis Lagassé** A F G | | 10 | | | | | | 3 | 4 |
| **Jacques Leblanc** B C | 4 | 11 | | 4 | 8 | | | | 2 |
| **Michel Plessis-Bélair** A B F G | | 8 | | 4 | | | | 4 | 5 |
| **Marie-France Poulin** A B D | | 11 | | 4 | | 5 | | | |
| **Martine Rioux** | | 9 | | | | | | | |
| **Marie-Anne Tawil** B C | | 10 | | 4 | 8 | | | | |

| OUTGOING DIRECTORS | Notes | Board | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|---|---|
| | **Number of meetings** | **5** | | | | | | | |
| **Robert Sauvé** (end of mandate: July 29, 2012) | | 4 | | | | | | | |
| | **Number of meetings** | **3** | | | | | | | |
| **Yves Ouellet** (end of mandate: October 10, 2012) | 5 | 1 | | | | | | | |
| | **Number of meetings** | **10** | | | **7** | | | **3** | |
| **Emmanuel Triassi** C F (resignation: December 7, 2012) | 6 | 10 | | 1 | 6 | | | 3 | |

**Board Committees**

A Executive
B Governance and Ethics
C Audit
D Human Resources
E Environment and Public Affairs
F Finance
G Pension Plan Financial Management

1. Thierry Vandal attends meetings of the Governance and Ethics, Audit and Human Resources committees as a guest.
2. Patrick Déry was appointed to the Board of Directors effective October 10, 2012.
3. Isabelle Hudon was appointed to the Environment and Public Affairs Committee effective November 16, 2012.
4. Jacques Leblanc participated as a substitute member in the meetings of the Pension Plan Financial Management Committee held on March 15 and April 13, 2012.
5. Yves Ouellet was appointed to the Board of Directors effective July 30, 2012.
6. Emmanuel Triassi participated as a substitute member in the meeting of the Governance and Ethics Committee held on September 6, 2012.

### GOVERNANCE AND ETHICS (B)

**Mandate:** The role of the Governance and Ethics Committee is to develop the rules of governance and codes of ethics applicable to directors, senior executives appointed by the company and employees of Hydro-Québec and its wholly owned subsidiaries; the expertise and experience profiles of the Board members; the criteria for assessing the performance of directors and the Board's functioning; the induction and training program for directors; and the measures for evaluating the company's efficiency and performance. This committee also makes recommendations to the Board regarding the company's Strategic Plan and Annual Report and the composition and mandate of the Board committees. The Governance and Ethics Committee is chaired by Michael Turcotte.

**Activities:** In 2012, the Governance and Ethics Committee met four times, including a joint meeting with the Environment and Public Affairs Committee to discuss the environmental governance framework. While carefully ensuring application of the governance measures in the *Hydro-Québec Act*, the Committee reviewed the mandates of the Board committees. It made recommendations concerning the appointment of the senior executives of Hydro-Québec's wholly owned subsidiaries as well as the directors and auditors of the company's first-tier wholly owned subsidiaries. It also recommended changes in some of the decision-making powers of the Board and the President and Chief Executive Officer, along with updates to the codes of ethics applicable to directors, executives and controllers of Hydro-Québec and its wholly owned subsidiaries. Furthermore, the Committee examined the annual reviews of several company policies as well as the *Annual Report 2011*.

**Summary of the assessment of Board performance:** In accordance with the *Hydro-Québec Act*, in 2012 the Governance and Ethics Committee assessed the performance of the Board of Directors. The directors completed a questionnaire based on assessment criteria that had been approved by the Board. Subsequently, the Committee studied the results and communicated them to the directors.

### AUDIT (C)

**Mandate:** The Audit Committee's role is to make recommendations to the Board of Directors on the approval of the financial statements of Hydro-Québec and its pension plan. It ensures that the financial statements accurately reflect the financial positions and changes therein, and that accounting practices and internal controls are adequate and effective. It issues an opinion prior to the Board's approval of the annual audit plan, audit mission letters and independent auditors' fees. The Committee oversees the planning of internal audit activities, ensures that the company has a plan to optimize the use of its resources and monitors this plan. Furthermore, it examines the integrated business risk management process. It is responsible for reviewing the relevance of its mandate on an annual basis. It can also act as the audit committee of any of the company's wholly owned subsidiaries. The Audit Committee is composed solely of independent directors who have the necessary expertise for the performance of its mandate. It is chaired by Jacques Leblanc.

**Activities:** The Audit Committee held eight meetings in 2012. As part of its recurring deliberations, it examined the quarterly and annual financial statements of Hydro-Québec and its pension plan and the annual financial statements of Société d'énergie de la Baie James. It also reviewed the company's annual control plan. It monitored the independence of the independent auditors and met with them in order to plan the audit and receive its results. The Committee recommended that the Board approve the fiscal year's audit plans for the company and its pension plan, as well as the updating of the Internal Auditor's mandate. It examined the internal and external audit results and reports on the control and optimization of the company's operations and resources and on management of the related risks. It also monitored the management of Hydro-Québec Distribution's accounts receivable and reviewed the summary of the commercial operations of the company and its first-tier interests. As well, it examined the company's 2013 internal audit plan and recommended its approval by the Board.

### HUMAN RESOURCES (D)

**Mandate:** The Human Resources Committee is responsible for establishing human resources policies as well as standards and rate scales applicable to the compensation of senior executives and employees of the company and its wholly owned subsidiaries. It is also responsible for developing the expertise and experience profile to be used in selecting the President and Chief Executive Officer and for proposing a candidate for that position to the Board of Directors, which will then make a recommendation to the Québec government. In addition, it develops and suggests criteria for assessing the performance of the President and Chief Executive Officer and makes recommendations to the Board regarding his compensation. It also participates in selecting the senior executives of the company and its subsidiaries and in developing a succession plan. The Committee is chaired by Marie-France Poulin.

**Activities:** In 2012, the Human Resources Committee held five meetings, including a joint meeting with the Finance Committee to examine Hydro-Québec's Business Plan, objectives, and corporate risk management. It evaluated whether or not the company had met its annual performance objectives. The Committee also examined the overall compensation of Hydro-Québec's employees, executives and President and Chief Executive Officer and of the employees and

executives of its wholly owned subsidiaries, and recommended approval by the Board. It also recommended that the mandate of the company's executives be updated and that the President and Chief Executive Officer's mandate be renewed. In addition, it closely monitored the business risks related to human resources, succession management within the company and the Senior Management succession plan. It also studied the *Report of Activities of the Corporate Ombudsman 2011* and examined the annual report on the application of the corporate policy Our Human Resources.

### ENVIRONMENT AND PUBLIC AFFAIRS (E)

**Mandate:** The role of the Environment and Public Affairs Committee is to provide opinions and make recommendations to the Board of Directors on environmental management and compliance; integration of sustainable development principles; public health and safety; community relations; the company's social responsibility and its contribution to the community; and its public image. It also receives environmental incident reports and related claims, opinions, investigations and legal proceedings. The Committee is chaired by Suzanne Gouin, who succeeded Gaston Blackburn.

**Activities:** The Environment and Public Affairs Committee met seven times in 2012, including a joint meeting with the Governance and Ethics Committee to discuss the environmental governance framework. It studied the results of the President and Chief Executive Officer's annual environmental management review as well as the semiannual reports on environmental compliance. It also reviewed the *Sustainability Report 2011* and recommended its publication. Moreover, the Committee recommended that the Board approve the granting of donations and sponsorships according to the criteria and rules in effect. As well, it examined the *Annual Report 2011* of the Fondation Hydro-Québec pour l'environnement and the 2011 results with respect to the company's communication and public relations activities, financing of university research chairs and the Fonds Hydro-Québec pour la Francophonie. It reviewed the regional profile of Hydro-Québec's activities for 2011 and the annual activity reports of the liaison committees established by the company with groups representing Québec agricultural producers and municipalities.

### FINANCE (F)

**Mandate:** The Finance Committee's role is to advise the Board on Hydro-Québec's directions, policies, strategies and overall objectives related to financing, borrowings, insurance, banking and risk management; on major investment projects outside Québec; and on important matters related to technology marketing. In addition, every year, it examines the company's consolidated portfolio of residual business risks. The Committee is chaired by Michel Plessis-Bélair.

**Activities:** The Finance Committee held four meetings in 2012, including a joint meeting with the Human Resources Committee for the purpose of analyzing the company's Business Plan, objectives and corporate risk management. It examined various annual programs and files of a financial nature before recommending their approval by the Board: borrowings, guarantees, financial risk management, swaps, sinking fund management, derivatives and underlying instruments, and counterparty risk management for energy trades performed by Hydro-Québec Production on wholesale markets. It also recommended Board approval of credit limits for each counterparty, based on credit rating, for each of the company's functions concerned. In addition, it followed up periodically on financial programs and reviewed tracking reports on capital projects of more than $50 million as well as the annual report on the application of the corporate policy Our Assets. The Committee also benefited from a presentation on Hydro-Québec's insurable risks.

### PENSION PLAN FINANCIAL MANAGEMENT (G)

**Mandate:** The role of the Pension Plan Financial Management Committee is to advise the Board on the directions, policies, strategies and overall objectives established by Hydro-Québec for its pension plan; the Pension Plan Funding Policy, the Pension Fund Investment Management Policy, actuarial valuations of the plan, choice of the benchmark portfolio, the plan's financial position and plan expenses. It also expresses its opinion on any other aspect of pension fund management. The Committee is chaired by Louis Lagassé.

**Activities:** In 2012, the Pension Plan Financial Management Committee met five times. It examined the annual actuarial valuation for purposes of pension plan funding and solvency, and recommended its approval by the Board. The Committee also recommended that the Board approve amendments to the Pension Fund Investment Management Policy, the annual pension fund management and pension plan administration budgets, and the reappointment of the actuary for the next annual valuation. The Committee reviewed the implementation plan concerning the Pension Fund Investment Management Policy. Furthermore, it evaluated the performance and structure of the pension fund portfolio and the performance of specialized portfolio managers. Lastly, it closely monitored changes in the pension plan's financial position.

# GOVERNANCE

Hydro-Québec is proud to support visual arts in Québec and exhibits some of its collection in high-traffic areas so it can be enjoyed by as many people as possible.

At right, *Heartthrob*, acrylic on canvas by Barry Alfkas, 2008. © Barry Alfkas

Next page: *Generation #2*, oil on canvas by Charles Gagnon, 1960. © Succession Charles Gagnon/Michiko Tajima Gagnon

Hydro-Québec's Board of Directors complies with the requirements of the *Hydro-Québec Act* with regard to governance. It also follows the guidelines of the Canadian Securities Administrators applicable to state-owned enterprises, even though it is not legally bound to do so because Hydro-Québec is not publicly traded.

## INDEPENDENCE

Apart from the President and Chief Executive Officer and the deputy minister appointed by the Québec government, the Board members are independent directors, i.e., they have no direct or indirect relationships or interests, for example of a financial, commercial, professional or philanthropic nature, that could interfere with the quality of their decisions as regards the interests of the company.

The Québec government appoints the members of the Board based on the expertise and experience profiles established by the company. Directors are appointed for a term of up to four years and the Chairman for a term of up to five years; they may be reappointed twice, successively or not.

## RULES OF ETHICS

The Board is responsible for compliance with the rules set out in the *Code of Ethics and Rules of Professional Conduct for Directors, Executives and Controllers of Hydro-Québec*, which are based primarily on the *Regulation respecting the ethics and professional conduct of public office holders*.

## COMPENSATION AND OTHER BENEFITS PAID TO DIRECTORS

Compensation for all independent directors, except the Chairman, is set out in Order-in-Council No. 610-2006. Compensation consists of a basic annual retainer of $17,364 plus a meeting fee of $814 for each Board or committee meeting. A yearly supplement of $5,427 is paid to the chairs of the Board committees. Pursuant to Order-in-Council No. 1099-2005, the Chairman of the Board receives annual compensation of $125,000. Board members are also entitled to reimbursement of travel expenses incurred in the performance of their duties.

## DIRECTOR INDUCTION AND TRAINING PROGRAM

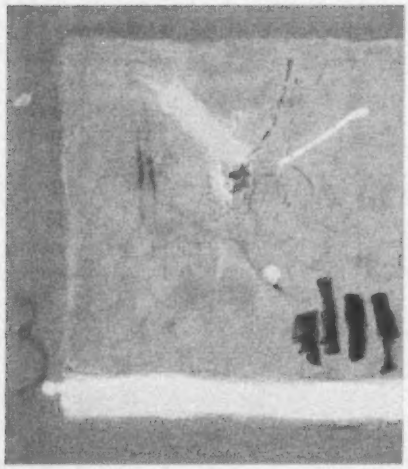
When Board members are first appointed, they receive training on their roles and responsibilities as well as the nature and business context of Hydro-Québec's principal activities. Board members are informed about the company's legal and regulatory context, with particular emphasis on the governance of a government-owned corporation. In addition, Board committee members receive documents regarding the mandate of their committee and the matters it handles. The director induction and training program also includes presentations on major issues and projects, as well as tours of the company's facilities.

In 2012, Board members visited the Romaine-2 jobsite. As well, they attended presentations on various subjects, including management of runoff risks, the goods and services procurement process, the capital project planning cycle, customer experience, information and communication technologies, and progress made at the Romaine jobsite.

## DEINTEGRATION

In 1997, Hydro-Québec implemented an organizational structure that allows some units to work independently from each other while remaining part of the same company. This is the principle of deintegration, or unbundling.

The operations of these units are subject to set rules of conduct and ethics. The Distributor's electricity procurement process is governed by the *Code of Ethics on Conducting Calls for Tenders*, which was approved by the Board of Directors and the Régie de l'énergie. The code ensures that the tendering process is conducted fairly for all electricity suppliers. The Régie follows up



annually on its application. Moreover, the Régie de l'énergie approved the *Code de conduite du Distributeur* (Distributor Code of Conduct) in March 2006. This code applies to transactions between the Distributor and the Generator for procurement not subject to the tendering process. It also governs dealings between the Distributor and its affiliates, with the aim of preventing affiliates' business operations from being financed, in whole or in part, by electrical service customers. The Distributor provides details on the application of the code in its annual report to the Régie. The *Code of Ethics on Conducting Calls for Tenders* and the *Code de conduite du Distributeur* (in French only) are available for consultation on the company's Web site.

Hydro-Québec TransÉnergie is subject to the *Transmission Provider Code of Conduct* approved by the Régie in 2004. This code governs relations between the Transmission Provider and its affiliates, and its purpose is to prevent any form of preferential treatment or cross-subsidization. The information that must be made public pursuant to the *Transmission Provider Code of Conduct* is published online at OATI webOASIS™ (**www.oatioasis.com/hqt/**). The Transmission Provider reports on the application of the *Transmission Provider Code of Conduct* in its annual report to the Régie.

## DIRECTORS' COMPENSATION AND BENEFITS IN 2012[a]

| | Base compensation[b][c] | Meeting fees[c] | Taxable benefits[d] |
|---|---|---|---|
| **Michael L. Turcotte**[e] | $125,000 | – | $408 |
| **Gaston Blackburn** | $12,714 | $13,407 | $3,996 |
| **Anik Brochu** | $17,314 | $10,566 | – |
| **Carl Cassista** | $17,314 | $11,779 | $5,019 |
| **Michelle Cormier** | $17,314 | $13,806 | – |
| **Suzanne Gouin** | $17,377 | $14,205 | $74 |
| **Isabelle Hudon** | $18,174 | $6,903 | – |
| **Louis Lagassé** | $22,726 | $13,415 | $3,996 |
| **Jacques Leblanc** | $22,726 | $20,302 | $5,070 |
| **Michel Plessis-Bélair** | $22,726 | $15,833 | $74 |
| **Marie-France Poulin** | $22,726 | $15,833 | – |
| **Martine Rioux** | $18,174 | $7,310 | – |
| **Marie-Anne Tawil** | $17,314 | $17,461 | $5,019 |
| **Emmanuel Triassi** | $16,981 | $15,833 | $3,899 |

a) By law, the President and Chief Executive Officer and the deputy minister appointed by the Québec government receive no compensation or meeting fees as members of Hydro-Québec's Board of Directors.

b) Pursuant to Orders-in-Council Noc. 1099-2005 and 610-2006.

c) Includes indexing from April 1, 2012.

d) Insurance and health assessments paid by Hydro-Québec.

e) Michael Turcotte also receives a car allowance of $16,003.

The *Reliability Coordinator Code of Conduct*, which was approved by the Régie de l'énergie in December 2007 after Hydro-Québec TransÉnergie's Direction – Contrôle des mouvements d'énergie – the unit responsible for system control – was designated as Reliability Coordinator for Québec, came into force in January 2008 and was amended in September 2011. The purpose of this code is to ensure that the reliability of the transmission system remains a top priority and to prevent any form of preferential treatment in favor of other branches of the Transmission Provider, its affiliates or other system users. The application of the *Reliability Coordinator Code of Conduct* is the subject of an annual report to the Régie.

## INTERNAL CONTROL SYSTEM

The company's Management maintains an internal control system that meets the demanding requirements of the internationally recognized framework developed by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission. This includes communicating Hydro-Québec's rules of ethics and *Code of Conduct* to employees, primarily to ensure the proper management of resources and the orderly conduct of business. The objective of this system is to provide reasonable assurance that financial information is relevant and reliable and that Hydro-Québec's assets are appropriately recorded and safeguarded. The system includes a business risk management process. Internal auditing helps to determine whether the internal control system is sufficient and effective and to assess the company's policies and procedures. It includes a performance audit to ensure the efficiency, effectiveness and cost-effectiveness of the company's activities. The Internal Auditor and the independent auditors may meet the Audit Committee, without restriction, to discuss any aspect of their mandate, with or without Management present.

## MONITORING OF AUDITOR INDEPENDENCE

Hydro-Québec uses various mechanisms to enable the Audit Committee to ensure that independent auditors remain independent, including a process whereby any assignment that could be given to them is analyzed beforehand. This process is governed by rules setting out conditions for approval of assignments; among other things, certain services cannot be provided by the auditors. Reporting to the Audit Committee on this subject includes the tabling of reports on fees billed by the auditors. With respect to the Auditor General of Québec, who is one of Hydro-Québec's auditors, no professional service assignment may be given to him because he serves the National Assembly exclusively. Since his independence is ensured by the *Auditor General Act*, he is not subject to the mechanisms described above.

## AUDITORS' FEES

KPMG LLP, Ernst & Young LLP and the Auditor General of Québec are Hydro-Québec's independent auditors for 2012. Professional fees billed by KPMG LLP and Ernst & Young LLP in 2012 for services other than auditing and certification amounted to 6.1% of the total $5.3 million in fees billed.

## ACCESS TO DOCUMENTS AND PROTECTION OF PERSONAL INFORMATION

Hydro-Québec carefully protects the personal information of its customers, suppliers and employees and respects the public's right of access to information. It takes all the necessary measures to comply with the *Act respecting Access to documents held by public bodies and the Protection of personal information*, or the "Access Act."

To facilitate access to information, Hydro-Québec publishes many documents on its Web site at **www.hydroquebec.com/publications**, in accordance with the *Regulation respecting the distribution of information and the protection of personal information*. This site also provides explanations regarding the public's right of access to information and the protection of personal information, including the procedure for requesting access to a document. Other information available on the site includes the *Hydro-Québec Act*, the company's regulations, codes and policies, and its major publications.

In addition, Hydro-Québec makes documents and information of public interest available on its Web site (**www.hydroquebec.com**). This includes information concerning construction projects under study and in progress, next-generation meters, electrical safety, energy efficiency, sustainable development, ground transportation electrification and the services and programs offered to Hydro-Québec's customers.

Furthermore, pursuant to the *Action Plan for People with Disabilities 2012*, Hydro-Québec has committed itself to taking all reasonable measures to ensure that people with disabilities can exercise their right to obtain complete, high-quality information.

In 2012, Hydro-Québec received 274 requests for access to information under the Access Act. Most applicants wanted to obtain documents such as studies, reports and contracts, or documents containing personal information about them. All the requests were processed within the prescribed time limit; 208 were granted in full or in part and 46 were refused. Request denials were due mainly to security issues or to the commercial or strategic nature of the documents requested. As for the remaining 20 requests, either Hydro-Québec was unable to fulfill them, for instance because it did not have the documents, or the request was withdrawn. Nineteen Hydro-Québec responses were the subject of requests for review by the Commission d'accès à l'information.

## ETHICS

Hydro-Québec attaches great importance to ethics in all aspects of its activities. The concept of ethics has been included in official company guidelines since 1988, with the aim of setting high standards of judgment and behavior in professional activities.

As a government-owned utility, Hydro-Québec must demonstrate exemplary probity, and it can do so only with the consistent support of its employees. Loyalty, integrity, respect, discretion and fairness are fundamental values reflecting Hydro-Québec's social commitment to its customers and the community. Ethical rules resulting from these values are set out in the *Code of Ethics and Rules of Professional Conduct for Directors, Executives and Controllers of Hydro-Québec* (see page 116) and in the *Code of Conduct* for employees. This document, which is available at **www.hydroquebec.com/publications**, has a twofold purpose: facilitate an understanding of the ethical principles set out in the policy Our Management and approved by the Board of Directors, and help all employees perform their duties in keeping with Hydro-Québec's values.

Hydro-Québec managers at all reporting levels play a key role in applying the company's ethical principles. They see to it that the Code of Conduct is applied and observed, thereby upholding the company's values. The Executive Vice President – Corporate Affairs and Secretary General, who is responsible for interpreting the Code of Conduct, may issue opinions on ethical questions with a view to preventing or rectifying a situation.

## LANGUAGE GUIDELINES

In 2012, Hydro-Québec continued its efforts to promote the quality of the French used in the company's internal and external communications. Various proficiency courses (grammar, business correspondence and specialized writing) were offered to employees, and three terminology bulletins were published on the intranet. Promotional and awareness activities were organized to highlight Francofête and

## COMPENSATION AND OTHER BENEFITS PAID TO THE COMPANY'S FIVE MOST HIGHLY COMPENSATED OFFICERS IN 2012

| | Base salary as at December 31 | Variable compensation[a] | Perquisites used[b] | Other taxable benefits | | |
|---|---|---|---|---|---|---|
| | | | | | Automobile | Life insurance and health insurance |
| | | | | Nature of benefit | Amount | |
| **Thierry Vandal**<br>President and Chief Executive Officer, Hydro-Québec | $452,077 | $90,415 | – | Executive vehicle | $8,032 | $7,625 |
| **André Boulanger**<br>President, Hydro-Québec TransÉnergie | $379,363 | $75,873 | $3,040 | Car allowance or vehicle, plus parking | $22,526 | $8,607 |
| **Richard Cacchione**<br>President, Hydro-Québec Production | $377,222 | $75,444 | $5,000 | | $4,876 | $7,536 |
| **Isabelle Courville**[c]<br>President, Hydro-Québec Distribution | $377,222 | $75,444 | $3,707 | | $19,907 | $6,667 |
| **Réal Laporte**<br>President, Hydro-Québec Équipement et services partagés<br>President and Chief Executive Officer, Société d'énergie de la Baie James[d] | $364,960 | $72,992 | $2,068 | | $14,817 | $7,170 |
| | **Pension Plan and Supplementary Benefits Program** | | | | | |
| | **Basic Hydro-Québec Pension Plan (HQPP)**<br>– Usual contribution under the plan<br>– Pension calculated on the basis of average salary for the best five years<br>– Credit of 2.25% per contribution year<br>– Recognition of 66.67% of the maximum variable compensation as pensionable earnings for purposes of the HQPP | | | | | |
| | **Supplementary Benefits Program**<br>– Contribution assumed by Hydro-Québec<br>– Additional benefits to offset the tax limits under the HQPP (lifting of ceiling on the permitted maximum amount)<br>– Payment of benefits according to the same terms as those applicable under the HQPP<br>*Other provisions applicable to the President and Chief Executive Officer of Hydro-Québec*<br>– Pension calculated on the basis of average salary for the best three years (less pension payable under the HQPP)<br>– Credit of 3.5% per contribution year (less pension credit under the HQPP)<br>– Recognition of two years for each year of participation<br>– Recognition of 100% of the maximum variable compensation as pensionable earnings (less portion recognized for purposes of the HQPP)<br>– Pension limited to 80% of the average base salary and variable compensation for the best three years | | | | | |

a) In accordance with the provisions of the *Act to implement certain provisions of the Budget Speech of 30 March 2010, reduce the debt and return to a balanced budget in 2013–2014* (S.Q. 2010, c. 20) and the *Act respecting mainly the implementation of certain provisions of the Budget Speech of 17 March 2011 and the enactment of the Act to establish the Northern Plan Fund* (S.Q. 2011, c. 18).

b) Taxable benefits related to financial and succession planning, physical fitness activities and professional associations.

c) Salary revised October 3, 2012, at the time of renewal of Thierry Vandal's mandate, pursuant to Québec Order-in-Council No. 353-2012 passed on April 4, 2012.

d) Isabelle Courville left her position as President of Hydro-Québec Distribution on January 14, 2013.

e) Réal Laporte does not receive any separate compensation as President and Chief Executive Officer, Société d'énergie de la Baie James.

## COMPENSATION AND OTHER BENEFITS PAID TO THE ONLY TWO OFFICERS COMPENSATED BY ONE OF THE COMPANY'S WHOLLY OWNED SUBSIDIARIES IN 2012

| | Base salary | Variable compensation[a] | Perquisites[b] | Benefits |
|---|---|---|---|---|
| **Michel A. Tremblay**[c] | $37,927 | $5,249 | $2,000 | Hydro-Québec pension plan and group insurance plans |
| **Sylvain Perron**[c] | $74,219 | $10,450 | $2,000 | |

a) In accordance with the provisions of the *Act to implement certain provisions of the Budget Speech of 30 March 2010, reduce the debt and return to a balanced budget in 2013–2014* (S.Q. 2010, c. 20) and the *Act respecting mainly the implementation of certain provisions of the Budget Speech of 17 March 2011 and the enactment of the Act to establish the Northern Plan Fund* (S.Q. 2011, c. 18).

b) Taxable benefits related to financial and succession planning and physical fitness activities.

c) Michel A. Tremblay served as General Manager, Cedars Rapids Transmission Company, Limited from January 1 to April 30, 2012, and Sylvain Perron from May 1 to December 31, 2012.

Environment Month, and the list of official place names was updated.

The company's language policy is available via the intranet, and reminders about the most important aspects of its application were issued throughout the year. Employees with questions about how the *Charter of the French Language* should be applied at Hydro-Québec received answers from the unit responsible for terminological and linguistic consultation.

## SUSTAINABLE DEVELOPMENT

The Sustainability Report discusses the company's main sustainable development initiatives, the progress made in this area and the company's sustainable energy choices. The report is based on the Global Reporting Initiative Guidelines. It is published at **www.hydroquebec.com/sustainable-development**, where additional information is provided on the company's performance with regard to sustainable development.

# ASSESSMENT OF COMPANY EFFICIENCY AND PERFORMANCE

Hydro-Québec is committed to a continuous improvement philosophy that includes adoption of industry best practices, and is thus constantly seeking to do better in terms of efficiency and performance. As prescribed by the *Hydro-Québec Act*, the company has implemented an assessment process in which it compares itself every three years against other companies in the power industry, using indicators covering all of its activities.

## BACKGROUND

In accordance with the *Hydro-Québec Act*,[1] the company conducted a benchmarking exercise using indicators taken from its *Strategic Plan 2009–2013*. The results are presented here. The top section of the table opposite shows the results of the indicators that were included in benchmarking studies conducted by recognized consulting firms. The indicators in the bottom part of the table were studied by independent organizations, but most of them were not benchmarked since there were no common metrics.

## REFERENCE PERIOD

Under the *Hydro-Québec Act*, the benchmarking results must be reported every three years. The reference period varies, depending on the availability of data for each indicator. In all cases, however, the information covers three years.

## RESULTS

Although the companies in the reference group all belong to the power industry, the comparability of the indicators is limited by large differences in business conditions, such as size of the territory served, the regulatory framework, and the age of assets.

RESULTS OF 2012 ASSESSMENT

| **INDICATORS COVERED IN THREE-YEAR BENCHMARKING** | | | Hydro-Québec *Average* |
|---|---|---|---|
| COST INDICATORS | | | |
| **Transmission – Operating and maintenance expenses** | | | |
| Transmission substations (US$/MVA)[a] *(Benchmarked by PA Consulting Group)* | **2010** | **2009** | **2008** |
| | 2,142 | 1,923 | 1,838 |
| | *1,427* | *1,583* | *1,492* |
| Transmission lines (US$/circuit-mile)[a] *(Benchmarked by PA Consulting Group)* | **2010** | **2009** | **2008** |
| | 2,309 | 2,723 | 1,974 |
| | *10,679* | *6,541* | *7,679* |
| **Distribution – Operating expenses** | | | |
| Customer operations (US$/customer account)[a] *(Benchmarked by First Quartile Consulting)* | **2011** | **2009** | **2007** |
| | 57 | 57 | 49 |
| | *60* | *55* | *44* |
| Distribution system (US$/customer account)[a] *(Benchmarked by First Quartile Consulting)* | **2011** | **2010** | **2009** |
| | 104 | 98 | 84 |
| | *96* | *75* | *77* |
| SERVICE RELIABILITY INDICATOR – DISTRIBUTION AND TRANSMISSION | | | |
| Service interruptions (minutes)[b] *(Benchmarked by First Quartile Consulting)* | **2011** | **2010** | **2009** |
| | 179 | 148 | 129 |
| | *159* | *109* | *128* |
| **OTHER INDICATORS** | | | Hydro-Québec |
| Average cost of generation (¢/kWh) *(Benchmarking of certain cost components by Electric Utility Cost Group)* | **2011** | **2010** | **2009** |
| | 2.1 | 2.1 | 2.0 |
| Overall satisfaction excluding Major Customers (out of 10) *(Indicator studied by an independent organization[c])* | **2012** | **2011** | **2010** |
| | *7.52* | *7.53* | *7.60* |
| Cumulative total energy savings (TWh) | **2012** | **2011** | **2010** |
| | 7.6 | 6.4 | 5.4 |
| Atmospheric emissions of vehicle fleet (t $CO_2$ eq.) *(Indicator studied by an independent organization[d])* | **2012** | **2011** | **2010** |
| | 53,049 | 58,126 | 58,992 |

a) Based on the exchange rate in effect for the year in question.

b) System average interruption duration per customer per year.

c) Ernst & Young (2010 and 2011) and Bureau de normalisation du Québec (2012).

d) Bureau de normalisation du Québec (2012). The 2011 and 2010 figures have been restated to reflect the adoption of a new calculation method.

1. *Hydro-Québec Act*, sections 7.2 and 20.1. Paragraph 15 of Section 7.2 states that the Board of Directors of the company must adopt "measures to assess the effectiveness and performance of the Company, including benchmarking against similar enterprises; such measures are to be carried out every three years by an independent firm." Moreover, Section 20.1, which deals with the company's annual report, states that the report must "state the results obtained from the benchmarking measures adopted by the board of directors."

### INDICATORS COVERED BY THREE-YEAR BENCHMARKING

Several performance indicators are the subject of periodic benchmarking under the regulatory terms applying to Hydro-Québec TransÉnergie and Hydro-Québec Distribution. These studies are usually conducted by PA Consulting Group and First Quartile Consulting, and the results are presented to the Régie de l'énergie as part of the rate cases.

### COST INDICATORS – TRANSMISSION

Hydro-Québec's operating and maintenance expenses for transmission substations are higher than the group average. However, it should be kept in mind that the exceptional size of the Hydro-Québec transmission system—the largest in North America—necessitates several voltage conversion steps; this means a greater number of facilities, a complex infrastructure and more difficult operating and maintenance conditions. Moreover, to ensure reliability, power transmission over very long distances requires the use of compensation and special protection systems, which are not usually found in the reference group.

As for transmission lines, Hydro-Québec's operating and maintenance expenses compare advantageously against the group average. The company's performance can partly be credited to the fact that 29% of its lines are operated at very high voltages. A given load can thus be transmitted over a smaller number of lines, yielding maintenance savings.

### COST INDICATORS – DISTRIBUTION

In 2011, the Distributor outperformed the reference companies in terms of operating expenses per account on the customer side of its operations. This testifies to the extensive efforts the Distributor has devoted to increasing its efficiency since 2009.

Also in 2011, the gap between the Distributor and the group average was significantly reduced in terms of operating expenses per customer account on the distribution system side of its operations.

### RELIABILITY INDICATOR

In the area of service reliability, too, Hydro-Québec narrowed its performance gap in relation to the group average in 2011, even though difficult weather conditions caused an unusually high number of outages.

### OTHER INDICATORS

Hydro-Québec uses other indicators to assess its performance, such as average cost of generation, customer satisfaction index, and indicators linked to energy efficiency and atmospheric emissions. However, these cannot be compared against other companies since there are no common metrics. Some indicators are nonetheless analyzed by an independent organization for use in the Sustainability Report (Ernst & Young in 2010 and 2011, Bureau de normalisation du Québec in 2012).

The average cost of generation remained relatively stable from 2009 to 2011. Recently, as a member of the Electric Utility Cost Group, Hydro-Québec Production began participating in a comparison of certain generating cost components.

The overall customer satisfaction index (excluding Major Customers) remained stable from 2010 to 2012.

The results of the company's energy efficiency efforts are in line with the annual targets.

Lastly, atmospheric emissions from the vehicle fleet have been reduced by 12.8% since 2005. Various measures have been implemented to improve the company's emissions performance: replacement of light vehicles with more fuel-efficient models, raising employee awareness about environmentally responsible driving, a ban on remote starters and incorporation of electric vehicles into the fleet.

# CODE OF ETHICS AND RULES OF PROFESSIONAL CONDUCT

FOR DIRECTORS, EXECUTIVES AND CONTROLLERS OF HYDRO-QUÉBEC

## PART I – INTERPRETATION AND APPLICATION

1. In this Code, unless the context indicates otherwise:

a) **"director"** means, with respect to the Company, a member of the Board of Directors of the Company, whether or not working full-time within the Company;

b) **"Governance and Ethics Committee"** means the Governance and Ethics Committee established in its present form by resolution of the Board of March 16, 2007 (HA-33/2007[1]);

c) **"spouse"** includes marriage partners and persons living as if married for more than one year;

d) **"Board"** means the Board of Directors of the Company;

e) **"contract"** includes a proposed contract;

f) **"control"** means the direct or indirect ownership of securities, including shares, conferring more than 50% of voting rights or economic interest without this right depending on the occurrence of a particular event or allowing the election of the majority of directors;

g) **"controller"** means the controller of the Company and the controllers of divisions or groups or units reporting to the President and Chief Executive Officer of the Company;

h) **"executive"** with respect to the Company means any contractual manager whose employment conditions are subject to the approval of the Board;

i) **"enterprise"** means any form that can be taken by the organization for the production of goods or services or any other business of a commercial, industrial or financial nature or any group seeking to promote certain values, interests or opinions or to exercise an influence on public officials; however, this does not include the Company or a non-profit association or group that has no financial link with the Company or is not incompatible with the objects of the Company;

j) **"subsidiary"** means a legal person or company controlled directly or indirectly by the Company;

k) **"related party"** means any Company subsidiary, including a subsidiary of the Hydro-Québec Pension Fund, any partnership (joint venture or common enterprise in which the parties exercise joint control) and any associate (an entity in which the investor holds 20% or more of the voting rights) of the Company;

l) **"associated person"** with reference to a director, executive or controller of the Company means:

1° his spouse, children and relatives, and the children and relatives of his spouse;

2° his partner;

3° a succession or trust in which he has a substantial interest similar to that of a beneficiary or in respect of which he serves as liquidator, trustee or other administrator of the property of others, mandatary or depositary; or

4° a legal person of whom he owns securities making up more than 10% of a class of shares carrying voting rights at any shareholders meeting or the right to receive any declared dividend or a share of the remaining property of the legal person in the event of liquidation.

m) **"Regulation"** means the *Regulation respecting the ethics and professional conduct of public office holders* (Order in Council 824-98 of June 17, 1998 (1998) 130 G.O. II, 3474, pursuant to sections 3.01 and 3.02 of the *Act respecting the Ministère du Conseil exécutif*, R.S.Q., c. M-30), as amended from time to time;

n) **"Company"** means Hydro-Québec.

2. In this Code, the prohibition to perform an act also applies to any attempt to perform it and any participation in it or incitement to perform it.

2.1 This Code applies to the directors, the President and Chief Executive Officer, other executives of the Company and its controllers. The executives and controllers of the Company are also governed by the *Code of Conduct* or other similar guidelines that may exist from time to time within the Company. In the event of divergence between this Code and any such document, the more restrictive text shall apply.

The directors and the President and Chief Executive Officer are also subject to the Regulation.

## PART II – ETHICAL PRINCIPLES AND GENERAL RULES OF PROFESSIONAL CONDUCT

3. The director, executive or controller is appointed to contribute to the achievement of the Company's mission in the best interest of Québec. Accordingly, he is expected to use his knowledge, abilities and experience in a way that will promote the effective, fair and efficient accomplishment of the objectives assigned to the Company by law and the good administration of the property it owns as mandatary of the State.

His contribution shall be made with respect for the law and with honesty, loyalty, prudence, diligence, efficiency, application and fairness.

3.1 The director, executive or controller respects the following principles in the performance of his duties:

- the values underlying the activities of the Company as a government-owned business company, which include customer satisfaction, a "business first" approach, respect for employees, equitable treatment of customers, suppliers and employees, quality improvement, respect for the environment, partnership with local communities and safeguarding the future; and
- the principles set out in the basic policies of the Company, expressing commitments and conveying a business culture with regard to customers, human resources, acquisition of assets and services, business partners, finance, assets, the environment, social role, management, security and financial disclosure.

3.2 The director, executive or controller is required, in the performance of his duties, to respect the ethical principles and rules of professional conduct provided by law, the Regulation as applicable, and those defined in this Code. In case of discrepancy, the more stringent rules and principles apply.

When in doubt, act according to the spirit of these principles and rules.

A director, executive or controller who, at the request of the Company, serves as director or member of an undertaking or a company, is held to the same standards.

3.3 Every director, executive and controller must report any violation to this Code of which he has knowledge or which he suspects has occurred, or is occurring, to the Chairman of the Board and to the Secretary.

This report shall be treated on a confidential basis.

4. The director, executive or controller shall not merge the assets of the Company with his own; he may not use the assets of the Company or information he obtains as a result of his duties for his own profit or the profit of others. These obligations continue even after the director, executive or controller has ceased to hold his position.

Specifically, a director, executive or controller may not engage in transactions involving securities the value of which could be influenced by certain actions of the Company, specifically with clients, suppliers or other partners if he has information unknown to the public in that respect.

1. The committee's mandate was amended by the Board on June 13, 2008 (HA-104/2008).

5. The director, executive or controller shall seek, in the performance of his duties, only the interest of the Company to the exclusion of his own interest or that of others.

5.1 The director, executive or controller is bound to discretion in regard to anything that comes to his knowledge in or during the performance of his duties and is at all times bound to maintain the confidentiality of such information.

5.2 In the performance of his duties, the director, executive or controller shall make decisions without regard for any partisan political considerations.

The Chairman of the Board, the director working full-time within the Company, the executive and the controller shall demonstrate reserve in the public expression of their political opinions.

6. The director, executive or controller may not directly or indirectly grant, solicit or accept a favor or an undue advantage for himself or for a third party.

In particular, he may not accept or solicit an advantage from a person or undertaking doing business with the Company or a subsidiary or acting in the name of or on behalf of such a person or undertaking if this advantage is intended or likely to influence him in the performance of his duties or generate expectations of this nature.

6.1 The director, executive or controller shall, in making decisions, avoid allowing himself to be influenced by offers of employment.

6.2 The director, executive or controller may not accept any gift or hospitality except what is customary and modest in value.

Any other gift or hospitality shall be returned to the giver.

7. The director may not make a commitment to a third party or grant them any guarantee relative to a vote he may be asked to make or any decision whatsoever that the Board may be asked to make.

7.1 The director, executive or controller may not, in the performance of his duties, deal with a person who has ceased to be a director, executive or controller of the Company for less than one year if this person is acting on behalf of a third party with respect to a proceeding, negotiation or other transaction to which the Company is a party and about which he has information unknown to the public.

7.2 After ceasing his duties, no director, executive or controller may disclose confidential information he has obtained or give anyone advice based on information unknown to the public concerning the Company or any other undertaking or company with which he had direct and substantial dealings during the year preceding the date on which he ceased his duties.

In the year following that date, he may not act on behalf or on account of another party with respect to a procedure, negotiation or other transaction to which the Company is a party and about which he has information unknown to the public.

8. The director, executive or controller shall collaborate with the Chairman of the Board or the Governance and Ethics Committee on an issue of ethics or professional conduct when asked to do so.

8.1 The director, executive or controller who intends to be a candidate for elective office shall inform the Chairman of the Board of this intention.

The Chairman of the Board or President and Chief Executive Officer with the same intention shall inform the Secretary General of the Conseil exécutif.

## PART III – DUTIES AND OBLIGATIONS OF DIRECTORS, EXECUTIVES AND CONTROLLERS WITH RESPECT TO CONFLICTS OF INTEREST

### PREVENTION OF CONFLICTS OF INTEREST

9. The director, executive or controller shall avoid placing himself in a situation in which his personal interest is in conflict with the duties of his position or in which reasonable doubt is cast on his ability to perform these duties with undivided loyalty.

In the event that this Code does not include provisions for a certain situation, the director, executive or controller must determine whether his conduct is in accordance with how the Company could reasonably expect a director, executive or controller to conduct himself in such circumstances. He must also determine whether a reasonably well-informed person would conclude that the situation might influence his decisions and impair his objectivity and impartiality in the performance of his duties for the Company.

10. A director who is employed full-time within the Company or one of its subsidiaries shall also avoid performing duties or being bound by commitments that prevent him from devoting the time and attention that the normal exercise of his duties requires.

As for other directors, they shall be sure to devote the time and attention reasonably required in the circumstances for the execution of their duties.

10.1 No director holding a full-time office with the Company, under pain of forfeiture of office, may have any direct or indirect interest in an undertaking, company or association that puts his personal interest in conflict with that of the Company.

However, such forfeiture is not incurred if that interest devolves to him by succession or gift, provided that he renounces or disposes of it with all possible dispatch. Meanwhile, sections 12, 13, 15 and 18 apply to this director.

Every other director who has an interest in an undertaking shall, on pain of forfeiture of his office, comply with the provisions of sections 12, 13, 15 and 18.

11. A director, executive or controller of the Company who serves as director, executive or controller of an affiliated enterprise shall be specifically authorized by the Board to:

a) hold shares, rights or any other security issued by such enterprise and conferring voting rights or economic interest in it or the right to subscribe or buy such shares, rights or securities;

b) benefit from any profit-sharing program, unless this director, executive or controller works full-time for the enterprise and the profit-sharing program is closely linked with the individual performance of the director, executive or controller within the affiliated enterprise;

c) benefit from a pension plan granted by the affiliated enterprise if he does not hold a full-time position within the enterprise; or

d) benefit from any advantage granted in advance in the case of a change of control of the affiliated enterprise.

For purposes of this section, "affiliated enterprise" means a legal person or company in which the Company owns, directly or indirectly, securities, including shares, conferring more than 10% of voting rights or economic interest.

12. A director, executive or controller who:

a) is party to a contract or a transaction with the Company or a related party;

b) has a direct or indirect interest in an enterprise that is a party to a contract or a transaction with the Company or a related party or is a director, executive, controller or employee of this enterprise, except, in the latter case, if it is an enterprise that belongs to the same group as the Company; or

c) enjoys a direct or indirect benefit in relation to a contract or transaction that reasonably may be considered likely to influence decision-making;

shall disclose the nature and extent of his interest in writing to the Chairman of the Board and to the Secretary as soon as he has knowledge.

For the purposes of this section, a proposed contract or a proposed transaction, including the negotiations related thereto, is considered a contract or transaction.

The same applies to a director who has a direct or indirect interest in any issue being considered by the Board of Directors.

The director shall at all times abstain from conveying any information of any kind to any employee, controller, executive or director of the Company with respect to this contract or interest.

The director shall abstain from deliberating or voting on any question linked to this interest and avoid trying to influence the related decision. The director shall also withdraw from the meeting for the duration of deliberations and voting on this question. These restrictions do not apply when the decision concerns an enterprise belonging to the same group as the Company.

12.1 A director who is a member of the Audit Committee of the Board of Directors may not have an interest in the Company or a subsidiary. In particular, he may not accept from the Company or a subsidiary fees with respect to consulting, consulting services or any other similar service.

13. The disclosure required by section 12 occurs, in the case of a director, during the first meeting:

a) in the course of which the contract, the transaction or question concerned is under study;

b) following the time at which the director who had had no interest in the contract, the transaction or question concerned acquires such interest;

c) following the time at which the director acquires an interest in the already concluded contract or a transaction; or

d) following the time at which any person with an interest in a contract, a transaction or a question under study becomes a director.

14. An executive or controller who is not a director shall make the disclosure required in section 12 immediately after:

a) having learned that the contract, the transaction or question concerned was or will be studied at a meeting;

b) having acquired the interest, if it is acquired after the contract or the transaction was concluded or the decision made; or

c) having become an executive or controller, if he becomes one after acquiring the interest.

The executive or controller may not try to influence the directors' decision in any way.

15. The director, executive or controller shall make the disclosure required in section 12 as soon as he has knowledge of a contract or a transaction contemplated by this section which, as part of the normal business of the Company, does not require the approval of the directors.

16. Sections 12 to 15 apply also when the interest concerned is held by a person associated with the director, executive or controller.

17. The director, executive or controller shall notify the Chairman of the Board or the Secretary in writing of the rights he may invoke against the Company, by indicating their nature and their value, as soon as these rights come into existence or when he acquires knowledge of them.

18. The director, executive or controller shall submit to the Chairman of the Board, within 30 days of being appointed and on January 31 of each year in which he remains in office, an attestation in the form provided in Schedule B and containing the following information:

a) the name of any enterprise (including its area of activity and place of operations), in which he owns directly or indirectly securities or assets, including common shares, when the holding of securities is greater than 10% of the total issued capital and shares outstanding, specifying the nature and proportion of securities owned and value of assets;

b) the name of any enterprise for which he performs functions or in which he has an interest in the form of a debt, right, priority, mortgage or significant commercial or financial benefit; and

c) any other fact, situation or transaction of which he has knowledge and that could put him in a conflict of interest situation or be perceived as such including the situations mentioned in section 12 a), b) and c) of the Code, which concern also an associated person.

A director, executive or controller to whom the provisions of paragraphs a) to c) do not apply shall fill out an attestation to that effect and present it to the Chairman of the Board and to the Secretary.

The director, executive or controller shall also produce such an attestation within 30 days of the occurrence of a significant change in its content.

The attestations presented pursuant to this section are treated as confidential.

19. The Secretary of the Company shall ensure that the declarations received pursuant to section 12 to 18 are made available to the Directors and the Governance and Ethics Committee.

Moreover, the Secretary of the Company notifies the Chairman of the Board and the Governance and Ethics Committee of any failure to satisfy the obligations provided for in sections 12 to 18 as soon as the Secretary becomes aware of them.

### WAIVERS

20. This Code does not apply:

a) to owning an interest by way of a mutual fund in whose management the director, executive or controller plays no role directly or indirectly;

b) to owning interests through a blind trust whose beneficiary cannot know its makeup;

c) to owning a minimum number of shares required to be eligible as director of a corporation;

d) to an interest which, by its nature and extent, is common to the public at large or a particular sector in which the director, executive or controller operates;

e) to a directors' liability insurance agreement; or

f) to the owning of shares issued or guaranteed by the Company, a government or municipality under the same conditions for everyone.

### ATTESTATION

20.1 Within thirty days of the adoption of this Code by the Board, thereafter, no later than January 31 of each year, each director, executive or controller shall submit to the Chairman of the Board and the Secretary of the Company the attestation appearing in Schedule C.

Each new director, executive or controller shall do the same within thirty days of his appointment to this position.

## PART IV – REMUNERATION

20.2 The director, executive or controller, for the exercise of his duties, is entitled solely to the remuneration related to those duties. Such remuneration may not include, even partially, monetary advantages such as those established, in particular, by a profit-sharing plan based on the variation in the value of shares or on a stake in the capital stock of the Company.

20.3 A director, executive or controller dismissed for just and sufficient cause may not receive a severance allowance or payment.

20.4 A director, executive or controller who quits his duties, who has received or is receiving a severance allowance or payment and who holds an office, employment or any other remunerated position in the public sector during the period corresponding to that allowance or payment shall refund the part of the allowance or payment covering the period for which he receives a salary or shall cease to receive it during that period.

However, if the salary he receives is lower than that he received previously, he shall be required to refund the allowance or payment only up to the amount of his new salary, or he may continue to receive the part of the allowance or payment that exceeds his new salary.

20.5 Anyone who has received or is receiving a severance allowance or payment from the public sector and receives a salary as director, executive or controller during the period corresponding to that allowance or payment shall refund the part of the allowance or payment covering the period for which he receives a salary or shall cease to receive it during that period.

However, if the salary he receives as director, executive or controller is lower than that he was receiving previously, he shall be required to refund the allowance or payment only up to the amount of his new salary, or he may continue to receive the part of the allowance or payment that exceeds his new salary.

20.6 A President and Chief Executive Officer who has ceased to perform his duties, who has received so-called assisted departure measures and who, within two years after his departure, accepts an office, employment or any other remunerated position in the public sector shall refund the sum corresponding to the value of the measures received by him, up to the amount of the remuneration received, by the fact of his return to the public sector, during that two-year period.

20.7 Part time teaching by a director, executive or controller is not covered by sections 20.4 to 20.6.

20.8 For the application of sections 20.4 to 20.6, "public sector" means the bodies, institutions and companies referred to in the section 3.3 of the Regulation in Schedule A.

The period covered by the severance allowance or payment referred to in sections 20.4 and 20.5 shall correspond to the period that would have been covered by the same amount if the person had received it as salary in his prior office, employment or position.

## PART V – APPLICATION OF THE CODE

### COMPETENT AUTHORITIES

20.9 The Associate Secretary General for Senior Positions of the Ministère du Conseil exécutif is the competent authority for the application of this Code with respect to the Chairman of the Board and the other directors of the Company appointed by the Government.

The Chairman of the Board is the competent authority with respect to all directors of wholly owned subsidiaries, executives or controllers of the Company.

The Chairman of the Board shall ensure observance of the ethical principles and rules of professional conduct by the directors, executives and controllers of the Company.

21. The Governance and Ethics Committee has as its mission to advise the competent authority with respect to ethics and professional conduct.

The Governance and Ethics Committee also performs the duties invested in it by the Board and performs any other duties related to ethics entrusted to it by the Board.

In the performance of its duties, the Governance and Ethics Committee may become acquainted with the attestations contemplated by section 19.

22. When a director, executive or controller is accused of a violation of ethics or the rules of professional conduct, the Governance and Ethics Committee is responsible for collecting all relevant information. It makes a report of its findings to the competent authority and recommends appropriate measures, if any.

The competent authority notifies the director, executive or controller of the alleged violations and the possible penalties. It informs him that he has seven days in which to respond and if he requests, to be heard on this matter.

23. The Governance and Ethics Committee may render advisory opinions to directors, executives or controllers on the provisions of this Code and their application to specific cases, even hypothetical ones. It is not required to limit its views to the terms contained in the request.

23.1 In order to allow an appropriate decision to be made in the case of an urgent situation requiring fast response or in an alleged case of serious misconduct, the competent authority may temporarily relieve of his duties, with remuneration, the director, executive or controller who is accused of violations of ethics or the rules of professional conduct.

24. The Secretary of the Company keeps records in which are stored the statements, disclosures and attestations that must be submitted to it under this Code, the reports and advisory opinions of the Governance and Ethics Committee and the decisions of the competent authority with respect to ethics and professional conduct.

The Secretary shall also take the necessary steps to ensure the confidentiality of the information provided by the directors, executives and controllers pursuant to this Code.

25. The Governance and Ethics Committee may consult and receive opinions from outside counsel or experts on any issue it considers appropriate.

26. A director, executive or controller does not violate the provisions of this Code if he has obtained in advance a favorable decision from the Governance and Ethics Committee on the following conditions:

a) the decision was obtained before the facts on which it was based became a reality;

b) the decision was submitted to the Board;

c) all of the relevant facts were fully disclosed to the Governance and Ethics Committee exactly and completely; and

d) the director, executive or controller has complied with all the requirements of the decision.

27. The Governance and Ethics Committee and the competent authority preserve the anonymity of complainants, applicants and informers unless there is a clear intention to do otherwise. They may not be forced to reveal information likely to disclose their identity except if the law or a court so requires.

### PENALTIES

28. Upon concluding that a provision of the law, the Regulation or this Code has been violated, the competent authority may impose either of the following penalties:

a) for an executive or a controller: the appropriate penalty, which can extend as far as termination of employment; and

b) for a director: reprimand, suspension without remuneration for a maximum of three months, or removal from the Board.

However, when the competent authority is the Associate Secretary General contemplated by section 20.9, the penalty is imposed by the Secretary General of the Conseil exécutif. If the penalty proposed consists of the removal of a public office holder appointed or designated by the Government, it can only be imposed by the latter; in this case, the Secretary General of the Conseil exécutif may immediately suspend the public office holder without remuneration for a period not exceeding 30 days.

Any penalty imposed on a director and the decision to temporarily relieve him of his duties must be in writing and give the reasons therefor.

29. In the case of a violation of section 10.1, the competent authority records in writing the forfeiture of office of the violator.

30. The director, executive or controller shall render an account and restore to the Company any profits earned or benefits received as a result of or on the occasion of a violation of the provisions of this Code.

31. A director's vote shall not be a casting vote if it is made in violation of the provisions of this Code or associated with such a violation, or if the director fails to produce the attestation contemplated by section 18.

# GENERATING, TRANSMISSION AND DISTRIBUTION FACILITIES

## Generation Installed capacity in MW

### Hydroelectric generating stations
### 35,125 MW

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Robert-Bourassa | 5,616 | Outardes-3 | 1,026 | Péribonka | 385 | Manic-1 | 184 |
| La Grande-4 | 2,779 | Sainte-Marguerite-3 | 882 | Laforge-2 | 319 | Rapides-des-Îles | 176 |
| La Grande-3 | 2,417 | Laforge-1 | 878 | Trenche | 302 | Chelsea | 152 |
| La Grande-2-A | 2,106 | Bersimis-2 | 869 | La Tuque | 294 | La Gabelle | 131 |
| Beauharnois | 1,853 | Outardes-4 | 785 | Beaumont | 270 | Première-Chute | 131 |
| Manic-5 | 1,596 | Eastmain-1-A | 768 | McCormick | 235 | Rapides-Farmer | 104 |
| La Grande-1 | 1,436 | Carillon | 753 | Rocher-de-Grand-Mère | 230 | Les Cèdres | 103 |
| René-Lévesque (Manic-3) | 1,244 | Toulnustouc | 526 | Paugan | 217 | Rapides-des-Quinze | 103 |
| Bersimis-1 | 1,178 | Outardes-2 | 523 | Rapide-Blanc | 204 | Other (19 generating stations rated less than 100 MW) | 798 |
| Jean-Lesage (Manic-2) | 1,145 | Eastmain-1 | 480 | Shawinigan-2 | 200 | | |
| Manic-5-PA | 1,064 | Brisay | 469 | Shawinigan-3 | 194 | | |

### Thermal
### 704 MW

| | |
|---|---|
| Bécancour and Cadillac (gas turbine) | 573 |
| Other (24 diesel plants) | 131 |

### Hydroelectric generating stations planned or under construction
### 1,700 MW

| | |
|---|---|
| Sarcelle | 150 |
| Romaine (4 generating stations) | 1,550 |

### Installed capacity of Hydro-Québec's generating fleet
### 35,829 MW[a]

| | |
|---|---|
| Hydroelectric (60)[b] | **35,125** |
| Thermal (26)[c] | **704** |

a) The installed capacity of Gentilly-2 nuclear generating station is not included in this total since this facility ceased to operate on December 28, 2012.

b) 59 operated by Hydro-Québec Production and 1 by Hydro-Québec Distribution.

c) 2 operated by Hydro-Québec Production and 24 by Hydro-Québec Distribution.

### Other sources of supply
### 8,063 MW

| | |
|---|---|
| Churchill Falls generating station (Churchill Falls (Labrador) Corporation Limited)[a] | **5,428** |
| 15 wind farms operated by independent power producers[b] | **1,349** |
| 7 biomass cogeneration facilities operated by independent power producers[c] | **114** |
| 3 small hydropower plants operated by independent power producers[b] | **23** |
| Agreements with other suppliers[d] | **1,149** |

a) Hydro-Québec has access to almost all the output until 2041.

b) Hydro-Québec purchases all the output.

c) Hydro-Québec purchases almost all the output.

d) Hydro-Québec has access to the output of these suppliers.

## Transmission

| Voltage | Lines (km) | Substations (number) |
|---|---|---|
| 765 and 735 kV | 11,422 | 38 |
| 450 kV DC | 1,218 | 2 |
| 315 kV | 5,287 | 65 |
| 230 kV | 3,188 | 53 |
| 161 kV | 2,125 | 44 |
| 120 kV | 6,926 | 218 |
| 69 kV or less | 3,745[a] | 96 |
| **Total** | **33,911** | **516** |

a) 3,473 km of lines operated by Hydro-Québec TransÉnergie and 272 km by Hydro-Québec Distribution.

## Distribution

| Voltage | Lines (km) |
|---|---|
| 34 kV | 745 |
| 25 kV | 108,644 |
| 12 kV | 4,978 |
| 4 kV or less | 282 |
| **Total** | **114,649** |

# MAJOR FACILITIES

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## UNITS OF MEASURE

| | |
|---|---|
| **¢/kWh** | cents ($0.01) per kilowatthour |
| **$M** | millions of dollars |
| **$B** | billions of dollars |
| **V** | volt (a unit for measuring voltage) |
| **kV** | kilovolt (one thousand volts) |
| **VA** | voltampere (a unit for measuring apparent power) |
| **MVA** | megavoltampere (one million voltamperes) |
| **W** | watt (a unit for measuring power) |
| **kW** | kilowatt (one thousand watts) |
| **MW** | megawatt (one million watts) |
| **GW** | gigawatt (one billion watts) |
| **Wh** | watthour (a unit for measuring electric energy) |
| **kWh** | kilowatthour (one thousand watthours) |
| **MWh** | megawatthour (one million watthours) |
| **GWh** | gigawatthour (one billion watthours) |
| **TWh** | terawatthour (one trillion watthours) |
| **km** | kilometre |
| **MMBtu** | million Btu (British thermal units) |
| **t** | tonne (metric ton) |
| **t $CO_2$ eq.** | tonnes of $CO_2$ equivalent |

Hydro-Québec wishes to thank all the employees and suppliers whose photos appear in this Annual Report.

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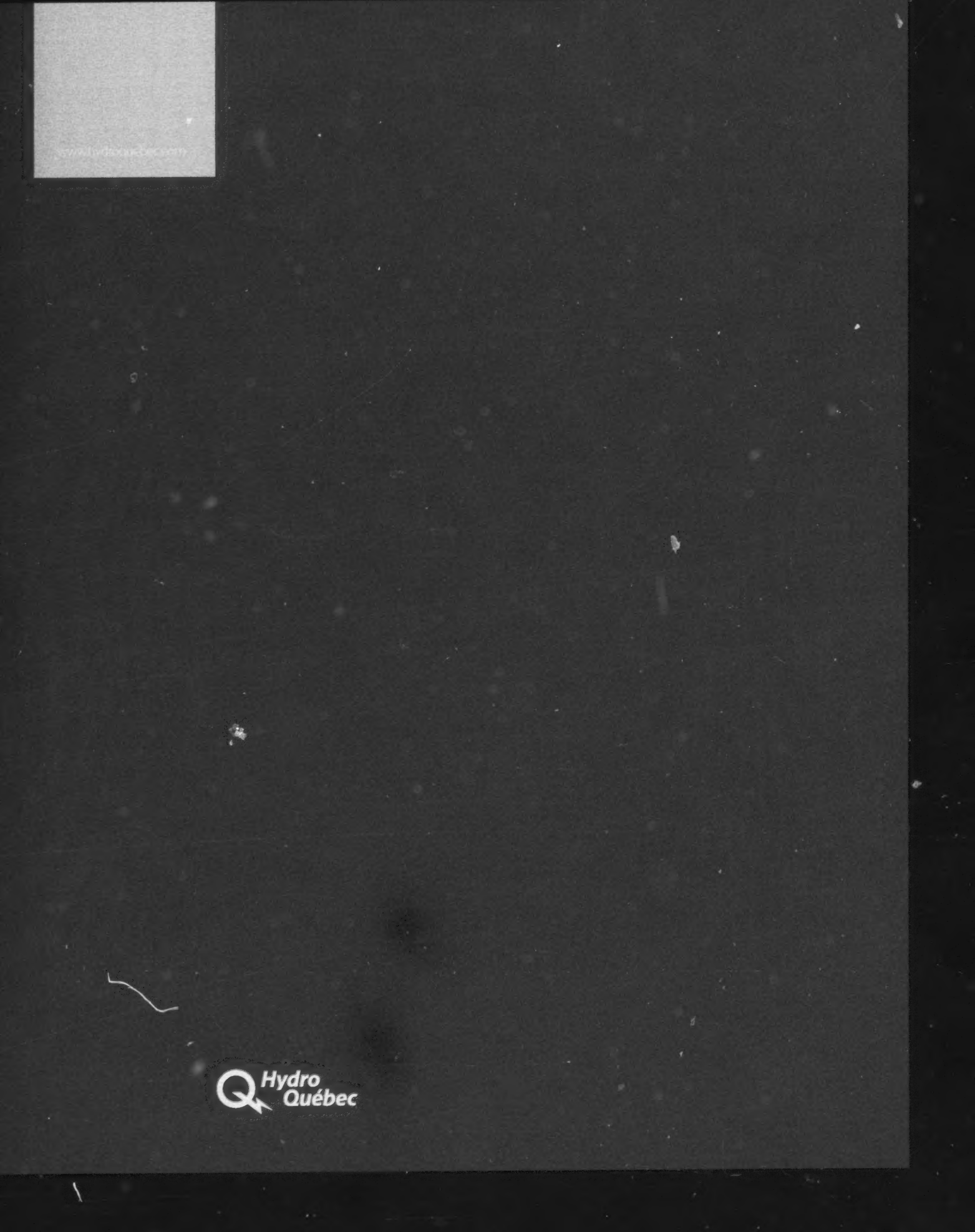
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